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Blood and Blood Derivatives—A New Public Health Field*

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UNTIL recent years, blood transfusion was not considered a matter of great concern to public health officials. A few private organizations strove to improve the technical aspects of transfusion, while others, in some cases allied with public health agencies, attempted to fill the needs of contagious disease hospitals and private physicians by collecting and distributing convalescent serum. Shortly before the war, a number of hospitals had established blood banks, and a few of them had even begun to distribute plasma and blood to neighboring institutions. Certain pharmaceutical laboratories likewise began the preparation and distribution of blood serum and plasma in liquid or dried form, thus providing these valuable therapeutic agents to physicians everywhere. The war has greatly accelerated the trend toward the widespread use of blood and blood derivatives—partly because a blood procurement, processing, and distribution program, in which the American Red Cross, the pharmaceutical laboratories, and the armed forces have coöperated, has made blood, freely donated by the American people, available in great quantities to physicians treating our wounded in every corner of the globe; partly because the OCD has stimulated the development of blood and plasma banks in many of the hospitals of the country; and partly because research in this field has expanded the possible clinical uses of blood and its derivatives. The American public has been educated to blood donation, and the public has become conscious of the fact that anybody who needs blood or its derivatives should not be deprived of something which the armed forces have demonstrated can be made universally available.

The sheer number of transfusions given annually is enough to command attention from public health authorities, but there are more compelling reasons: (1) protection of the public from disease transmitted by blood and its derivatives; (2) provision to the public of blood products for the prevention of communicable disease; (3) distribution of blood and blood products

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for use in the treatment of disease. These reasons in order indicate an expanding conception of the functions of a health department. The first acknowledges its customary responsibility for the protection of the public from transmissible disease whenever there are accepted methods of control. The second, the provision of agents for the control of transmissible disease, is a logical extension of the first. The third, however, represents an excursion of public health agencies into the practice of medicine and therefore demands justification.

1. *The transmission of disease by blood and its derivatives*—The fact that certain diseases can be transmitted by the transfusion of blood has been recognized for a good many years. Its importance lies in the fact that these diseases are frequently serious, are often unrecognizable in the donor, and have become more widespread in our population as a result of the war.

a. *Syphilis*—The application of sensitive "exclusion" tests for syphilis to the serum of prospective donors has reduced the incidence of transfusion syphilis. However, it is possible to transmit syphilis by transfusion from a donor in the primary stage of the disease when the serologic test may still be negative.[1] Hence the introduction of laws requiring the physician to certify that a donor is free of transmissible disease, presumably as the result of a careful physical examination. Such laws, although worthy in purpose, are rather unworkable, and reliance should be placed on the use of bank blood, since blood held in the refrigerator for at least three days is unlikely to transmit the disease.[2] While other spirochetal diseases and certain bacterial infections may also be transmitted by blood, these should be ruled out by such simple procedures as temperature taking and brief questioning of the donor.

b. *Malaria*—The transmission of malaria by transfusion is well authenticated. In Massachusetts, Rubinstein has shown that transfusion malaria has been more common than the mosquito-born disease in recent years.[3] Although the tertian and aestivo-autumnal forms may be transmitted by the blood of recently recovered patients, quartan malaria is the usual type, since the parasites may persist for thirty years or more and the donor may not be aware of ever having had malaria. It seems likely that donors from the veterans' groups who have been in the endemic malarious zones, particularly the Mediterranean area, will have to be excluded as donors for whole blood and their blood converted to dried plasma or plasma fractions in order to obviate this risk in the post-war period.

c. *Homologous serum jaundice*—A vexing problem has been created by the realization that blood or plasma from an apparently healthy person may produce severe hepatitis with jaundice in the recipient several months later. The causative agent is probably a virus, which may circulate in the donor's blood for considerable periods without recognizable symptoms, and which is able to survive long periods of storage and to pass ordinary bacteriological filters. The importance of this disease which had been recognized for some time by British workers[4] was brought home with full force when epidemics of jaundice broke out in troops of the United States[5] and British armies[6] as well as in the civil population of Brazil[7] who had received yellow fever vaccine stabilized with a small amount of human serum.

Although the agent of hepatitis may be transmitted in whole blood, the statistical chances of its transmission are greatly increased by the pooling procedures used in making plasma. The disease has a long incubation period, varying from 60 to 180 days, its pathology appears to be much the same

as that of epidemic hepatitis (catarrhal jaundice) with acute yellow atrophy in fatal cases [8] and evidence that in non-fatal cases the process ultimately results in complete restitution of normal liver architecture,[9] while its prognosis is perhaps somewhat more serious. Whether or not it is the same disease modified by a different portal of entry or a different disease cannot yet be stated categorically. Methods for destroying the agent in whole blood and plasma which are applicable on a large scale have not been found. At the start of the plasma fractionation program to be discussed later, it was feared that the incidence of serum jaundice might be extremely high because of the size of the pools of plasma used (200–10,000 donors per pool) and the fact that the methods used would probably not damage such a hardy virus, but experience with the products of plasma fractionation has so far failed to substantiate this fear.

d. *The transmission of antigens and anaphylactic antibodies by transfusion*—Following the ingestion of food, small amounts of unmodified protein may pass through the intestinal mucosa and enter the circulation. Foreign proteins may be injected into donors in the form of various types of vaccines and sera. For these reasons it is important that donors be used in the fasting condition and that those donors who have had recent inoculations should be excluded, since the transfusion of blood containing small amounts of foreign protein into a highly sensitive subject may result in severe anaphylactic symptoms. The passive transfer of hypersensitiveness of the anaphylactic type by virtue of the presence of antibodies in the donor's blood may also occur. Thus the use of very highly allergic donors or of those who have recently had injections of serum or vaccine such as rabies vaccine is also to be deprecated unless their blood is to be used in plasma fractionation where it will be pooled with so many other bloods that antigens or antibodies will be diluted sufficiently to render them inocuous.

e. *The Rh factor in medicine*—Recent studies upon the importance of the Rh factor and the production of anti-Rh agglutinins as the result of pregnancy or multiple transfusions do not need to be elaborated here.[10] However, the fact that such antibodies may lead to fatal transfusion reactions and to erythroblastosis foetalis in the new-born indicates that facilities for determining the Rh status of donors and recipients must be available wherever transfusions of whole blood are used in obstetrical patients, in the new-born, or in patients who have received multiple transfusions.

This rather brief outline of some of the forms of disease, besides reactions due to incompatibility or pyrogens, which may result from the transfusion of blood or its products, indicates that strict control is necessary. Of the conditions mentioned, most are preventable by proper selection of donors and by good technique, but the problem of serum jaundice remains an enigma which needs solution. The possibility of disease transmission emphasizes both the need for proper regulations concerning blood donors and the value of centralized blood collection in a few depots where it is possible to maintain technical staffs who are competent to screen donors intelligently and to direct their blood into the different channels in which it may be used with safety. Moreover, it emphasizes the need for the provision of laboratory facilities and standardized reagents for blood grouping so that this essential determination can be made with accuracy.

2. *Use of blood in the prevention of disease*—The use of convalescent serum, normal serum, or placental extract in the control of measles has become a standard procedure in medical prac-

tice.[11] The recent demonstration that the gamma globulin fraction of normal human plasma is even more satisfactory will be discussed below. This fraction is also effective in the prevention of epidemic hepatitis. Since these two diseases are widespread and endanger the health of the public, there is every reason for health departments to provide these materials to physicians.

3. *Distribution of blood and blood derivatives for the treatment of disease*—The assumption of responsibility by public health authorities for any phase of the care of patients with illnesses other than those which menace the health of the community is an extension of their functions which will be subjected to criticism. In this instance, its justification would appear to lie in the social and economic spheres. Blood and its derivatives have come to be recognized as essential adjuncts to good medical care, and unless they can be distributed to physicians under public auspices many patients will be deprived of them, at least until the cost of all blood derivatives is reduced very considerably and better facilities for distribution become available than at present.

The Place of Blood and Its Derivatives in Modern Medicine and Surgery

It is now possible to sketch the main outlines of a program for the most economical and efficient use of human blood in the treatment and prevention of disease based on methods which have been developed in the past few years for separating some of its many physiological components. In the following section an attempt will be made to review briefly the clinical uses of blood and its derivatives and some of the improvements in techniques which underlie them.

1. *Whole blood*—The war has demonstrated the crucial importance of whole blood transfusion in repairing the results of hemorrhage, a major factor in the pathogenesis of wound shock. Although plasma and albumin have played an extremely useful rôle in saving lives simply because they could be transported and stored so easily, it has become quite clear that when a large amount of blood is lost, its replacement with plasma protein solution results in the development of anemia, which in turn will have untoward physiological effects unless corrected.[12] The widespread use of whole blood in recent campaigns has been made possible by two principal factors: rapid transportation by air and improvement in the anti-coagulant solution used. Refrigerated blood has been flown across both Atlantic and Pacific oceans after its collection in this country so rapidly that it could be used for a considerable period after its arrival on the fighting fronts. This would never have been feasible if the conventional sodium citrate solution had been used as an anti-coagulant. The life of stored blood under optimal conditions with this solution is scarcely more than five days. On the other hand, solutions have been devised which will increase the life of blood on storage to three or four weeks. The solution which has gained widest use is acid citrate dextrose (ACD) solution [13] which differs from sodium citrate in the presence of a small amount of glucose and the use of a mixture of sodium citrate and citric acid in order to produce a final pH of approximately 7, *i.e.*, slightly acid to the normal blood pH. These solutions, by prolonging the life of stored blood, diminish the danger of transmission of syphilis. Whether improved preservation of the red cell will increase the time of survival of the malarial parasite in whole blood remains to be determined. ACD solution is superior to the modified Rous-Turner solution recommended by DeGowin [14] simply because the amount

of fluid used is very much smaller, thus conserving transportation space and reducing the size of the infusion necessary to produce a given physiological effect.

Many proposals have been made to use whole blood in emergencies without cross-matching. Witebsky and his colleagues have shown that purified blood group substances A and B can be added to group O blood to neutralize its anti-A and anti-B isoagglutinins.[15] Such neutralized O blood may be used in emergencies without preliminary cross-matching except when there is reason to fear reactions dependent upon the Rh factor, *i.e.*, in obstetrical patients, the new-born, and in recipients of previous transfusions. However, the fact that plasma or albumin can be used for the emergency treatment of shock with almost complete freedom from reactions suggests that they might well be used to tide a patient over until his blood group is determined and compatible blood can be administered.

2. *Resuspended red blood cells*—Upon centrifugation, the first division of blood into its functional components can be made, *i.e.*, into cells and plasma. After removal of the plasma, the packed cells may be resuspended and used for the transfusion of patients in whom there is a deficiency of red cells but an adequate supply of plasma protein. This applies particularly to those forms of anemia for which transfusion provides the only available method of therapy, namely leukemia, aplastic anemia, and the hemolytic group of anemias. If whole blood can be kept for periods up to thirty days, there seems little reason why it should not be possible to keep resuspended cells for a similar period. Although red cells resuspended in saline have been safely administered to many patients, the useful life of the cell in saline is only about five days.[16, 17] Corn syrup has been proposed as a resuspension medium,[18] and many investigations are now in progress which should ultimately indicate what type of solution is optimal for this purpose. If resuspended cells can be given a dating period of a month from the time of collection, it will mean that their distribution from blood depots to any part of the United States should be entirely feasible and that their safety could be controlled by insisting upon a sufficient period of storage to assure the destruction of agents such as *Treponema pallidum* or the *plasmodia* of malaria and to allow the completion of sterility tests. Since resuspended cells can be administered in concentrated suspensions and in larger amounts than whole blood without overloading the circulation, it is possible to shorten the period of treatment for patients with severe anemia.

3. *Plasma*—Plasma will undoubtedly be preferred in this country to serum, which has been extensively used in the British Commonwealth.[19] Although the latter may be filtered with ease to insure sterility, its preparation involves the loss of fibrinogen, and the red cells, occluded in the clot, cannot be used for resuspension. Plasma can be prepared in a number of forms, each of which has advantages for particular purposes. Liquid plasma, kept at room temperature to prevent the precipitation of certain proteins and lipoids will supply the colloid osmotic effect of plasma.[20] However, on storage at room temperature its labile components deteriorate and thus it is not effective for supplying prothrombin, fibrinogen, or hemophilic globulin.[21] If plasma is kept in the frozen state, it can be preserved for long periods of time unchanged and, when thawed rapidly, may be used to supply these various labile proteins. Its principal disadvantages are the expense of refrigeration equipment and the time necessary to thaw the material. Dried plasma is fairly well preserved but requires expensive

facilities for its preparation and must be reconstituted with water for use.[22] The value of plasma, (1) as a substitute for whole blood in the treatment of hemorrhage, (2) as the agent of choice in replacing the plasma lost in burns or peritoneal irritation, or (3) as a means of providing preformed protein for injection into hypoproteinemic patients with acute illnesses, has been amply demonstrated in the last few years.[23, 24, 25] To what extent plasma will be used in the future, however, remains to be determined since the further separation of plasma into its component parts makes it possible to administer in comparatively pure form many of the individual plasma proteins mediating different physiological functions.

4. *Plasma fractions*—

a. *The process of plasma fractionation*—Plasma and whole blood have in the past been given for many conditions in which the patient suffered from a deficiency of only one particular component of plasma. Thus, in hemophilia, there is a marked prolongation of clotting time due to a deficiency in hemophilic blood of one of the normal plasma globulins.[26] The transfusion of fresh plasma containing this protein results in a prompt fall of clotting time to normal just as does the addition of a small amount of fresh plasma to hemophilic blood *in vitro*.[27] The transfusion of 100 or 200 ml. of fresh plasma at frequent intervals to hemophilic patients at times of hemorrhage or when essential surgical procedures are carried out is time-consuming and wasteful, since the actual amounts of the particular protein needed by the patient are very small. If this anti-hemophilic factor were made available in relatively pure form, the material could be given in a very small injection, thus simplifying treatment for both doctor and patient, and much larger amounts of material could be administered when necessary to severe cases without the unpleasant side effects which may go with massive transfusions of blood or plasma. It is this type of reasoning which lies behind the program of plasma fractionation.

Methods which make it possible to separate plasma proteins on a large scale into relatively pure fractions have been developed by Cohn, Strong, Oncley, Hughes and Armstrong and their associates.[28] They depend primarily upon the precipitation of different plasma protein fractions by varying concentrations of alcohol at low temperatures with control of the temperature, hydrogen ion concentration, ionic strength, and protein concentration of the solution. Such a system with five different variables makes it possible to define optimal conditions for the separation of the many plasma proteins. Moreover, the use of alcohol substitutes for the clumsy process of dialysis the desiccation of precipitates from the frozen state with evaporation of the small amounts of alcohol and water carried down with them, leaving the proteins as dry powders which may be kept until needed for final packaging. This program is still in the phase of development, and, although a number of products have been derived from the basic fractions, there are other products with potential clinical uses which have not yet been brought to the point of adequate purification and clinical trial. The more therapeutic agents that can be produced from a given amount of plasma, the more economical such a process becomes both from the standpoint of the costs of production and the better utilization of human blood.

This system of plasma fractionation * which has been developed with blood

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* A series of papers describing the chemical characteristics of the products of plasma fractionation and the physiological, pathological, immunological, and clinical studies made with them will be found in a single number of the *Journal of Clinical Investigation*, to which the reader is referred for details.[29] Pertinent publications not included in this series will be referred to in the text.

collected by the American Red Cross as a result of a group of studies carried on under various auspices, but principally under contracts, recommended by the Committee on Medical Research, with the Office of Scientific Research and Development, and with the coöperation of the U. S. Navy, gives rise to five primary fractions. Fraction I contains most of the fibrinogen and serves as the source of its various derivatives. The next fraction, Fraction II + III, is a combined fraction, containing alpha, beta, and gamma globulins. It is separated by subfractionation into a gamma globulin fraction containing most of the antibodies of the plasma, a fraction containing prothrombin, a fraction in which the isohemagglutinins are concentrated provided the plasma pool is made up from bloods of one group only, and a lipoprotein fraction. Fraction IV contains alpha and beta globulins, some of them lipoproteins and others water-soluble and containing but little lipoid. Fraction V contains most of the albumin of the plasma. Fraction VI contains a very small amount of protein and consists mainly of salts and soluble material not precipitated during the process of fractionation. In so far as possible, the whole process has been designed to separate the various protein components of plasma so as to preserve the functional integrity of all.[30] The stability of these fractions varies markedly, and consequently this goal has not always been perfectly realized. However, as knowledge has accumulated, it has been possible to improve the process progressively in such a way as to carry the separation of the various components to a point where they may be preserved in stable form for future use.

With this very brief outline of the major fractions, we shall turn to a consideration of the applications which have been found for the final products prepared from them.

(1) *Products of fibrinogen and thrombin*—The proteins known to be concerned with blood coagulation are fibrinogen, prothrombin, anti-hemophilic globulin, and fibrinolysin. The processing of fibrinogen and prothrombin to stable and satisfactory products for clinical use is now well under way and considerable amounts of material have been delivered for use by the armed forces.

(a) *Fibrin foam and thrombin*—Fibrin foam consists of a coagulum of fibrinogen and thrombin which is beaten with air to attain a spongy consistency and which can then be cut into pieces of the desired size, desiccated and sterilized by heat. In this form it is stable, dry, and brittle. Before use, it is soaked in a solution of reconstituted thrombin which renders it flexible and permeates it, so that when it is applied to a bleeding area, the blood welling up into the foam is promptly coagulated and thus the foam becomes incorporated in a clot which extends into it from the bleeding surface. The great advantage of fibrin foam is that it consists of human proteins, is absorbable, and can be left *in situ*, without subsequent reaction. It has proved extremely valuable as a hemostatic agent in surgery, particularly in neurosurgery. Thrombin is prepared by conversion of the prothrombin separated from Fraction II + III, and is then dried from the frozen state since it is unstable in solution. Fibrinogen itself is likewise unstable but can also be kept when dried from the frozen state. Powdered fibrinogen and thrombin have been studied as aids in various surgical procedures, for example as a means of forming a coagulum around a renal stone so it may be removed without crumbling or as a physiological glue for the application of skin grafts.

(b) *Fibrin film*—By various manipulations, fibrinogen may be converted into a number of types of sub-

stances, the properties of which will depend upon the conditions under which the clot is formed and its subsequent chemical, mechanical, and thermal treatment. Fibrin film is an elastic, tough, semi-transparent membrane, which has been found quite useful as a substitute for the dura mater covering the brain when this has been removed at operation or as a result of trauma. Here the film is slowly absorbed and replaced by connective tissues without inciting the formation of adhesions between the brain and its coverings.[31]

(c) *Antihemophilic globulin*—Fraction I has been found to contain the greatest concentration of antihemophilic activity of any of the plasma fractions.[32] Studies of the usefulness of Fraction I in repairing the coagulation defect of hemophilia upon intravenous or intramuscular injection have been made, and indicate that injections of from 200–400 mg. of Fraction I are as effective as 100–200 ml. of plasma in bringing the coagulation time back to normal.[33, 34] Further clinical studies in this disease are indicated, when sufficient Fraction I becomes available over and above the needs of the armed forces for fibrin foam and film.

(2) *"Gamma" globulin (immune serum globulin)*—The gamma globulin fraction of plasma contains all the antibodies against infectious agents normally present in pooled plasma for which clinical or laboratory tests have been made. The degree of concentration of these antibodies parallels quite closely the degree to which gamma globulin is concentrated from the plasma, as determined chemically. Thus present preparations for the American Red Cross and the armed forces consist of a 16.5 per cent solution of protein, of which more than 95 per cent is gamma globulin. This represents an approximately 25-fold concentration of this protein over its concentration in plasma and it has been found that antibodies such as diphtheria antitoxin, scarlatinal antitoxin, complement-fixing and mouse-protective antibodies to influenza A virus, and agglutinins for the H antigen of the typhoid bacillus are concentrated from 15 to 25-fold. Antibody studies on gamma globulin prepared from bloods collected in different areas of the country at different times have revealed a few interesting variations.[35] Thus antibodies to influenza A approximately doubled after the epidemic of the winter of 1943–1944. Diphtheria antitoxin titers are lower in California and relatively high in the Southwest. Early in the program of plasma fractionation, Robinson[36] suggested that such a globulin fraction of pooled adult plasma might be useful in the prevention and attenuation of measles. This has turned out to be the case and numerous publications indicate that human gamma globulin provides a safe and reliable agent for either the prevention or modification of measles, depending upon the dosage used.[37, 38, 39] Its principal advantages are its availability, safety, and uniformity. Recently Stokes and Neefe have demonstrated that gamma globulin is very potent as an agent for the prevention of epidemic hepatitis.[40] Because of the usefulness of this material in the prevention of measles and the fact that more gamma globulin became available as a result of the plasma fractionation program than was necessary to meet the requirements of the armed forces, the American Red Cross has arranged for its distribution to the public through public health agencies.[41]

It is obvious that from the standpoint of the public interest, it would be extremely unwise to use globulin for the prevention of measles or hepatitis every time that a patient was exposed to one of these diseases, since this would merely result in the gradual development of a very large susceptible population. On the other hand it is

important to be able to prevent measles in such institutions as hospitals or in particular individuals, and gamma globulin has proved excellent for this purpose. Moreover, the evidence indicates that modification of measles after known exposure by the use of small doses of gamma globulin results in a diminution of those complications which make measles a serious disease. Adequate statistical evidence must be brought forward, when sufficient data accumulate, to prove, as is generally believed, that such mild attacks of measles establish a permanent immunity.

Unfortunately not every communicable disease can be prevented by the administration of gamma globulin. The results so far have been rather unsatisfactory where it has been administered to patients exposed either to mumps or chicken pox. A recent study in New York State, using gamma globulin as a source of poliomyelitis antibody in very large doses, has confirmed the previous findings with convalescent serum that administration of antibody during the pre-paralytic stage of the disease has no effect on its outcome.[42]

There is a field for further investigation in the concentration of antibodies from convalescent sera, particularly in the case of scarlet fever and mumps, where there is reason to believe that the globulin fraction might be useful in either prevention or treatment. McGuinnes demonstrated that the administration of gamma globulin from convalescent mumps plasma on the first day of mumps parotitis appeared to diminish the incidence of orchitis, whereas globulin from normal plasma failed to do so.[43] Convalescent plasma provides as satisfactory a source of albumin, thrombin, fibrinogen and other plasma proteins as normal plasma and therefore in a blood procurement program of the future, its collection and fractionation so that the antibodies can be preserved until needed may be very worth while. Another field in which only a start has been made is in the production of human hyperimmune plasma. Hyperimmunization of humans has been used for the development of serum against *Hemophilus pertussis*, the etiologic agent of whooping cough. Such serum appears to have definite value in passive protection against whooping cough and probable value in the treatment of the disease.[44] It has been subjected to fractionation, and hyperimmune pertussis globulin is now commercially available.

(3) *Isohemagglutinins* — Since proper blood grouping is essential for the safe use of whole blood transfusions, it is important to have potent, standardized reagents for this purpose. By pooling plasmas of one group only at the start of the fractionation process, it is possible to obtain from Fraction II + III very satisfactory isohemagglutinin preparations. It has recently been shown that, although good A (anti-B) globulin can be obtained from Group A bloods, better B (anti-A) globulin is obtained from pooled O bloods absorbed with B cells than from B bloods.[45] Since O and A donors are found in approximately equal number in the population and the B donors provide the right amount of B cells for absorption of the anti-B agglutinins from O blood, this greatly simplifies isohemagglutinin preparation.

(4) *Human serum albumin*—The albumin fraction of plasma makes up about 55 per cent of the total plasma proteins and is largely responsible for their osmotic effect. Albumin is not only more potent osmotically but less viscous in solution, more soluble, and more stable than most of the plasma globulins. Thus, when separated, it is possible to dispense it in a 25 per cent solution which has the viscosity of whole blood with a hematocrit of 50. Moreover, albumin is a water-soluble protein and thus may be dissolved in

water or any of the commonly used intravenous solutions. One hundred ml. of a 25 per cent albumin solution has an osmotic effect equivalent to 500 ml. of citrated plasma, and provides a concentrated protein solution which is stable enough to be transported for long distances and stored at ordinary temperatures and which, when properly prepared, gives an extremely low incidence of reactions on intravenous injection. Because it does not have to be reconstituted and can be injected rapidly, it is the agent of choice for emergency administration in cases of shock. The compactness of albumin would make it extremely convenient for a practising physician to carry with him, just as it is convenient for front-line use in the armed forces. Albumin may be combined with any desired amount of parenteral fluid, and a 5 per cent solution of albumin in saline or glucose is approximately isosmotic and isotonic with human plasma. Thus albumin might easily replace plasma since it supplies the osmotic effect needed in shock and also the particular plasma protein which is deficient in most cases of hypoproteinemia. In the treatment of hypoproteinemia, the fact that the albumin can be given in a small volume of fluid containing very little sodium ion makes it far superior to plasma, in which there is a much larger amount of sodium present, which may aggravate the edema in certain cases.[46, 47] The small volume and safety of albumin is a great convenience in pediatric practice. To date, albumin has had comparatively little civilian use for the simple reason that all that is being produced is required by the armed forces.

(5) *Other fractions of plasma*—No mention has been made of clinical uses for most of the alpha and beta globulins, among which are found the lipoproteins associated with the transport of fat as well as certain enzymes and hormones which circulate in small amounts. Clinical and chemical studies are under way to investigate the possible applications of this remaining group of plasma proteins.

This brief resumé will serve to show the manifold uses for blood and its products in the clinic. It is clear that considerable further experience will be necessary before the most effective scheme for the utilization of blood can be worked out in detail. It is conceivable that whole blood, resuspended cells, and plasma fractions may ultimately provide all the therapeutic agents needed, but at present there are many who feel that plasma should be included. Whereas whole blood has certain very important clinical uses, in many other instances it should be replaced by the use of resuspended cells on the one hand or plasma or its fractions on the other. Moreover, the development of plasma fractionation provides many new therapeutic agents for general use such as albumins, gamma globulin, and fibrin foam with thrombin, which were not previously available. An important by-product of the plasma fractionation program is the introduction into the biologics industry of new methods for the separation of proteins—methods which are applicable to the purification of animal sera, vaccines, and tissue extracts. The remainder of this review will be concerned with a discussion of some of the possible methods for making blood and its derivatives generally available on an equitable basis.

ORGANIZATION OF A BLOOD PROGRAM

The administrative problems involved in a comprehensive blood program may be divided into several phases—those of procurement, processing, and distribution. Let us assume that the objective is to provide the optimal amount of blood and its derivatives to all who need them, in the safest possible form, and

at the minimum public expense. There are numerous ways of attaining this objective in each phase of the program and it is probable that in different parts of the country, with their differing facilities and needs, different methods may prove best. It is to be hoped that various methods will be tried, so that it will be possible to make comparisons between them. The integrated program carried out for the armed forces during the war in this country as well as in the British Commonwealth has been responsible for a tremendous expansion of facilities for the procurement and processing of blood, and has provided invaluable experience, which should be carefully studied by all those charged with the responsibility of developing blood programs for the civil population in the future.[48] Several states have already launched programs or have laid plans to do so. Both Michigan [49] and North Dakota [50] have begun to collect, process, and distribute plasma on a state-wide basis, while Massachusetts [51] is planning a program for the collection of blood, processing of plasma and plasma fractions, and distribution of the products to physicians of the state.

The rôle of public health authorities in such programs may vary from a minimum of setting up proper regulations and standards to a maximum of control and management of every phase of the program. The National Institute of Health already assures the safety of commercially available blood derivatives through control of all biological products produced for interstate sale.

1. *Blood procurement*—There are two methods of obtaining human blood, either by appeal to donors to give their blood free, or by purchase in the open market. Both methods become simpler as the public becomes educated to blood donation. There should be little difficulty in maintaining an adequate flow of blood on a voluntary basis after the war is over. In London, a volunteer blood transfusion service under the Red Cross has been successfully operated since 1921. Hospital blood banks have been able to keep on hand adequate supplies collected from relatives and friends of patients in many cities where the Red Cross Blood Donor Service was recruiting large numbers of donors at the same time. The motives of self-interest and community spirit can be utilized. In Michigan, for example, plasma is distributed in any community on a basis of blood contributed, a certain percentage of the total amount collected in a given community being returned to it as plasma, and a smaller amount being kept in a central pool for emergency use in any part of the state where it might be needed. Hospital blood banks operate on the same principle, but on a smaller scale. The use of paid donors would be utterly impossible for any broad blood program if donors had to be paid at the previous conventional rate of $5 per 100 ml. of blood. However, if the fees paid to donors can be reduced to very much smaller sums, then the use of paid donors becomes somewhat more feasible from an economic standpoint.

The procurement of blood might be carried out either by the Red Cross, which has done such a magnificent job in the collection of blood for the armed forces, by professional teams under the health department as in Michigan, through established hospital blood banks, or by a commercial laboratory which might contract to supply local needs through the use of paid donors. The National Red Cross has ruled that local chapters may collaborate in the procurement of blood with health agencies if they so desire, provided certain principles are adhered to, among which are: voluntary blood donations only, technical responsibility wholly in the hands of a reliable medical or health agency, a unified program of volunteer

blood donor service in any one community to serve all acceptable hospitals and licensed physicians, and no charge for blood or blood derivatives to be made to physicians, hospitals, clinics, or patients.[52] There is much to be said for a unified blood procurement program for a particular area, from the standpoint of economy, technical competence of the staff, and safety of both donor and recipient.[53] By steering blood from donors in various categories into whole blood, plasma, or plasma fractionation, the available donors can be utilized most efficiently with the least chance for transmission of disease.

2. *Blood processing*—The processing of blood to liquid or frozen plasma is being carried out quite successfully in many hospital blood banks in the United States today. On the other hand, the production of dried plasma or plasma fractions involves a large initial expenditure for equipment and a technical staff which it would not be feasible for any one hospital to maintain unless they were processing blood derivatives for a large area. This could be done most satisfactorily and economically either by the commercial laboratories which have had so much experience with the process during the war or by the laboratories of some of the larger state health departments. The actual cost of the plasma fractionation process is remarkably low, and the more products that can be derived from plasma, the less expensive each of them becomes. Once the initial outlay for equipment is taken care of, the costs of plasma fractionation should be considerably less than those required for the procurement and distribution of blood, particularly if the donor must be paid.

3. *Distribution*—In no phase of a blood program would it seem to be so important for a public agency to play a rôle as in the field of distribution. The cost of the plasma or albumin required for the treatment of a single patient with hypoproteinemia or of the resuspended cells required by a patient with aplastic anemia, for example, no matter what the method of blood procurement or processing, will exceed the capacity to pay of most patients with these conditions. Experience has shown that in those hospitals with blood and plasma banks, much larger amounts of blood and plasma are used than in hospitals not so equipped, indicating that the needs exceed present civilian supplies. It is conceivable that the most economical way to take care of this problem would be to have all blood derivatives prepared by the commercial laboratories, with the cost of their provision to the medically indigent borne by public welfare agencies. On the other hand, the health department might procure and distribute at public expense the various blood derivatives discussed above. Commercial distribution on a competitive basis involves rather high costs compared to distribution by public agencies. Whether or not the public agency acquires the finished products from the commercial laboratories, or procures the blood and pays a commercial laboratory for the processing, or carries out the whole program on its own is of little consequence and will probably vary from one locality to another.

SUMMARY

An attempt has been made to review the various aspects of the use of blood and its derivatives in the prevention and treatment of disease from the standpoint of those concerned with the public health. The latter have an important regulatory function in seeing to it that the public is protected from disease transmitted or produced by blood and blood derivatives, and that those blood products required for the control of communicable disease should be made readily available. Moreover, there is

much to be said for the distribution of blood and its derivatives for use in the treatment of disease at public expense since this should result in an equitable system of distribution of these essential therapeutic agents regardless of the capacity of the patient to pay. Some of the manifold uses for blood and its various derivatives — resuspended cells, plasma, the products of plasma fractionation—have been reviewed, and brief mention has been made of the administrative mechanisms that may be brought into play in order to provide an adequate supply of blood and blood derivatives to the civilian population in this country.

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Typhoid Vaccine Studies X

The Suitability of Vi Antigen as an Auxiliary Immunogen for Typhoid Vaccine

Progress Report

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THE extraction of an active antityphoid immunogenic fraction (Vi antigen) from a coliform organism designated by Kauffmann as "*S. coli* 5396/38" [1] was announced last year in a preliminary report by Luippold.[2] Since this announcement, studies have been made on the stability of the Vi extract under a variety of conditions, on its immunogenic activity when combined with bacterial vaccines, and on its toxicity for laboratory animals and for man. Also, methods of preparation and standardization have been simplified and improved. These factors are of preliminary importance when considering the usefulness of any substance as an auxiliary immunogen for typhoid vaccine. The only remaining property of practical importance (should Vi extract qualify in the others cited above) is its effectiveness in man. This will be considered in a separate report to be submitted at a later date. The present communication deals with the preparation, stability, and toxicity of the Vi extract, and the feasibility of employing it to reinforce a bacterial vaccine.

EXPERIMENTAL

A brief review of the work leading up to publication of the preliminary report cited above is desirable in order to introduce the studies referred to in the title of this paper.

THE EFFECTIVENESS OF VI EXTRACT AS AN ANTITYPHOID IMMUNOGEN

Upon extraction of this substance, the first step was to establish its position among previously recommended preparations of typhoid antigens in respect to immunogenic potency. As stated in the preliminary report, the product used for experimentation was a dispersion of the dried material obtained by precipitating out with alcohol or acetone those substances on *S. coli* 5396/38 soluble in dilute (1 per cent) HCl. Thus, the Vi extract could be compared on a dry-weight basis with two preparations of antigenic fractions of the typhoid bacillus, one of which was derived from a tryptic digest (Antigen 1), the other from an autolysate (Antigen 2). These products were titrated for immunogenic potency simultaneously with the Vi extract in a series of four individual active-immunization tests in mice. Details and results of these titrations have been included in Table 1.

It is apparent, from these results, that per unit weight of material, the Vi extract is somewhat superior to conventionally prepared antigenic fractions of the typhoid bacillus, when mice immu-

* With the technical assistance of Technician Third Grade Wolden W. DeVore and Technician Fifth Grade Milton Toporek, Medical Department, A.U.S.

TABLE 1

Comparison of Immunogenic Potency of Antigen 1, Antigen 2, and Vi Extract

Amount of Antigen Administered per Mouse (Mg.)	*Combined Results of 4 Individual Tests Wherein Respective Groups of Mice Were Challenged with from 100 to 1,000 m.l.d. of Typhoid Organisms 6 Days After Receiving the Doses Listed in Column on Left of the Materials Designated Below (No. of Deaths/No. of Mice)*		
	Antigen 1	*Antigen 2*	*Vi Extract*
0.005	0/16	0/16	0/16
0.0005	0/16	0/16	1/16
0.00005	5/16	2/16	0/16
0.000005	12/16	9/16	3/16
0.0000005	8/8	6/8	4/8

nized with these substances are challenged by infective (invasive) doses of *E. typhosa*.

EFFECTIVENESS OF VI EXTRACT IN THE PRESENCE OF PARATYPHOID ORGANISMS

Although there has never been any intention of replacing typhoid organisms in TAB vaccine with the Vi extract, the antityphoid potency of a product in which such a substitution had been made was determined, merely to detect any interference with the activity of the extract which might be exerted by the paratyphoid organisms.

Accordingly, a product consisting of 250 million of each of the paratyphoid A and B organisms and 0.01 mg. of dried Vi extract per ml. was prepared to represent ViAB. This was matched against TAB vaccine containing the same numbers of paratyphoid organisms and 1,000 million typhoid bacilli per ml.—the stock TAB vaccine in current use. Appropriate controls were included, as will be noted in Table 2 where details and results of this comparison have been recorded.

It will be seen that the Vi extract retained its activity in the presence of paratyphoid organisms, and that ViAB was quite as effective an antityphoid agent as was TAB vaccine. However, it is not implied by this that typhoid organisms could advisedly be replaced by the Vi extract, in practice. *All* typhoid immunogens should be present in a vaccine. Vi antigen is considered as merely a supplementary substance which can be added advantageously to the other antigens (contained in the cells) of the typhoid bacillus.

TABLE 2

Comparison of Immunogenic Potency of TAB Vaccine and ViAB

Amounts of TAB, ViAB, and of the Control Materials Administered per Mouse (ml.)	*Result of Challenging Dose of 100,000 Typhoid Organisms in Mice Which Had 6 Days Previously Received the Doses Listed in Column on Left of the Materials Designated Below (No. of Deaths/No. of Mice)*			
	TAB Vaccine	*ViAB Mixture*	*Typhoid Vaccine*	*Para A & B Vaccine*
0.05	1/4	0/4	0/4	3/4
0.005	0/4	1/4	1/4	4/4
0.0005	3/4	0/4	2/4	4/4
0.00005	4/4	1/4	4/4	...
0.000005	4/4	3/4	4/4	...

COMPARATIVE IMMUNOGENIC POTENCY OF TAB AND TAB VI

Having established the freedom of activity of Vi extract in the presence of paratyphoid organisms, it was only natural to choose TAB vaccine as the first product to be fortified with the extract. Although the TAB vaccine used by the U. S. Army has given a good account of itself, there has never been any assumption on our part that it could not be improved. The addition of Vi extract appeared to be a simple and direct method of improving this product which has already been tested in the field, without altering any of its original components.

Evidence of such enhancement was sought as follows: To 50 ml. of stock TAB vaccine was added 0.5 mg. of the Vi extract. This TABVi was titrated for antityphoid potency against the same lot of TAB in a series of three individual tests. Details and results have been recorded in Table 3.

The antityphoid potency of TAB vaccine was increased approximately 10-fold by the addition of 2,000 Typhoid Immunogenic Units [3] (in the form of Vi extract) per ml. of vaccine. Experimentally, at least, fortification of TAB vaccine with Vi extract is both feasible and demonstrably effective.

NOTE: The foregoing is the definitive work on which was based the suggestion in the preliminary report that Vi extract be used as a fortifying agent for TAB vaccine. The work reported below was done subsequently in order to determine the suitability of Vi extract for such use, from the standpoints of preparation, standardization, stability, and toxicity.

PREPARATION OF VI EXTRACT

The original announcement of this Vi extract [2] stated that the substance was extracted from V-form organisms with dilute solutions of HCl, precipitated out with acetone, and recovered as a light-brown powder. It has since been found, however, that the cleared (centrifugalized) digest of organisms in HCl is a preferable form with which to work, and such a product is recommended, prepared as described below.

The culture designated *S. coli* 5396/38 is grown to produce a maximum predominance of V-form colonies. This is accomplished by colony selection and by incubation at room temperature (20° C.–25° C.). In our experience, we have been unable to obtain a 100 per cent V-form growth, there being invariably a sprinkling (about 1 per cent) of the W-form present.

When the culture has become predominantly V-form, massive transplants

TABLE 3

Comparative Immunogenic Potency of TAB and TABVi

Test No.	*Designation of Immunizing Substance*	*Results of Injecting 50,000 Typhoid Organisms into Mice Which Had 7 Days Previously Received the Materials Designated in Column on Left in the Amounts (ml.) Indicated Below (No. of Deaths/No. of Mice)*			
		0.05	*0.005*	*0.0005*	*0.00005*
1	TAB	0/8	0/8	6/8	7/8
	TABVi	0/8	0/8	0/8	7/8
2	TAB	0/8	2/8	6/8	8/8
	TABVi	0/8	0/8	2/8	6/8
3	TAB	0/8	0/8	4/8	8/8
	TABVi	0/8	0/8	0/8	5/8

TABLE 4

Optimum Extraction Time for Vi Antigen

Period of Contact (Organisms in 1 Per cent HCl)	*Results of Injecting 50,000 Typhoid Organisms in Mice Which 7 Days Previously Had Received the Doses (ml.) Indicated Below of Cleared Solutions of Vi Antigen Obtained After the Periods of Extraction Designated in Column on Left (No. of Deaths/ No. of Mice)*		
	0.0005	*0.00005*	*0.000005*
1 hour	0/7	0/7	5/7
1 day	0/7	0/7	3/7
2 days	0/7	0/7	7/7
3 days	0/7	0/7	6/7
10 days	0/7	0/7	5/7

are made to infusion-agar plates and incubated at room temperature for 24 hours. The growth is suspended in distilled water, and the organisms are extracted with acetone, then dried in a desiccator.

One gram of dried organisms is then added to 100 ml. of a 1 per cent solution of HCl (1 part 36 per cent HCl to 99 parts distilled water). Solution of available substances is allowed to take place for 1 day at room temperature, with shaking at frequent intervals. The mixture is then cleared by centrifugation at high speed (3,000 r.p.m.). Various extraction periods have been tried, from 1 hour to 10 days; however, apparently nothing is gained by extraction for more than 1 day (see Table 4). An even shorter period may prove to be adequate.

From this basic HCl extract, cleared by centrifugation, the material can be further purified by precipitation with alcohol or acetone, then dried, weighed, and resuspended in distilled water. However, resuspension is not easily accomplished and a completely satisfac-

TABLE 5

Stability of Immunogenic Component of Acid and Neutralized Solutions of Vi Extract

Designation of Vi Extract	*Period of Storage in Refrigerator*	*Amount of Preparations Administered per Mouse (ml.)*	*Results of Injecting 50,000 Typhoid Organisms into Mice Which Had 7 Days Previously Received the Amounts Indicated in 3rd Column of the Extracts Designated in 1st Column, in the Form Indicated Below (No. of Deaths/No. of Mice)*	
			Raw HCl Sol.	*Neutralized Sol.*
V-Ex-4	1 year	0.0005	6/6	0/6
		0.00005	6/6	0/6
		0.000005	6/6	4/6
V-Ex-5	1 year	0.0005	0/6	0/6
		0.00005	6/6	0/6
		0.000005	6/6	3/6
V-Ex-8	6 months	0.0005	1/6	0/6
		0.00005	5/6	0/6
		0.000005	6/6	6/6

tory dispersion has thus far not been obtained. We prefer to work with the cleared supernate of the raw HCl digest obtained as described above, after neutralization with NaOH. In this form, the Vi extract is a concentrated water-clear solution which does not precipitate out upon standing and is otherwise (chemically) quite stable. An interesting fact in regard to the relative stability of the raw HCl solution and the neutralized product was demonstrated in potency tests of these preparations after various periods of storage in the refrigerator. Contrary to expectations, the raw HCl solution was less stable in respect to both physical and immunogenic properties. It showed considerable precipitate and it had lost much of its immunizing potency, whereas the neutralized sample of the same substance was unchanged physically and retained its original immunogenicity. Comparative determinations for immunogenic potency of raw and neutralized samples of the same basic preparations of Vi extract have been recorded in Table 5. These indicate that early neutralization of a newly prepared product is advisable.

The neutralized solution of Vi antigen may be standardized biologically (determination of its TIU value) [3] or by determining the dry weight of organic substance present—which is represented by the difference in weight between the solids present in a measured amount of solution after desiccation in a jar at room temperature, and the residual weight after heating at 500° C. in a crucible. For our purposes, we have found that a determination of the TIU value of the substance is preferable; for, in so doing, we can add a certain number of TIU's to each unit volume of vaccine with assurance of the extent of effective increase in immunogenic potency.

This neutralized product, prepared as described above, was used in the following reported experiments to determine the stability of its immunogenic properties.

METHOD OF TITRATING IMMUNOGENIC POTENCY

The method of titrating all substances reported in this paper is essentially that described in a previous publication.[3] Briefly, it consists of injecting intraperitoneally 0.5 ml. amounts of serial 1:10 dilutions of the substance (or of a dispersion of the dried material in distilled water) into respective groups of mice, followed 6 or 7 days later by a challenging dose of typhoid organisms suspended in 5 per cent mucin and intraperitoneally administered.

STABILITY OF VI EXTRACT

The first question which naturally arises is in regard to the stability of Vi extract in the presence of preservatives such as phenol, tricresol, and formaldehyde. One or another of these substances would likely be present in any bacterial vaccine, and its potential destructive effect would have to be reckoned with.

Another important point, closely linked with the effect of preservatives on Vi extract, is storage—storage of Vi extract as a dispersion in distilled water and as a component of typhoid vaccine, in a refrigerator and in the warmth of living conditions, to represent ideal and adverse situations, respectively.

Still another question arises, concerning the physical stability of Vi extract: If it were made a component of typhoid vaccine, would it remain in the suspending fluid as an independent substance, or would it become adsorbed to the bacterial cells? In either case, certain theoretical advantages would be gained while others would be lost. This question is chiefly of academic interest, but the answer should be available.

TABLE 6

Stability of Vi Extract in Presence of Preservatives

Preservative Added to V-Ex-7	Amount of Materials Administered per Mouse (ml.)	Results of Injecting 50,000 Typhoid Organisms into Mice Which 7 Days Previously Had Received the Materials and Amounts Indicated in Columns on Left, at the Intervals Subsequent to Preparation Set Forth Below (No. of Deaths/No. of Mice)				
		Day of Preparation	2 Months	4 Months	7 Months	9 Months
Phenol (0.5%)	0.0005	0/8	0/8	0/8	0/8	0/8
	0.00005	0/8	1/8	0/8	1/8	1/8
	0.000005	3/8	6/8	5/8	7/8	6/8
Tricresol (0.25%)	0.0005	0/8	0/8	0/8	0/8	0/8
	0.00005	0/8	1/8	0/8	1/8	0/8
	0.000005	5/8	6/8	5/8	5/8	7/8
Formaldehyde (0.2%)	0.0005	0/8	0/8	0/8	0/8	0/8
	0.00005	0/8	0/8	1/8	0/8	1/8
	0.000005	4/8	6/8	4/8	5/8	5/8
None (Control)	0.0005	0/8	not tested		0/8	0/8
	0.00005	0/8			1/8	0/8
	0.000005	4/8			7/8	7/8

STABILITY IN THE PRESENCE OF PHENOL, TRICRESOL, AND FORMALDEHYDE

Preparations titrated in this experiment consisted of respective portions of V-Ex-7 to which had been added 0.5 per cent phenol, 0.25 per cent tricresol, and 0.2 per cent formalin. These materials were stored in the refrigerator, and titrated at various intervals for immunogenic potency. Details and results of these titrations have been recorded in Table 6. The results indicate that there has been little if any significant change in the immunogenic potency of V-Ex-7 after 9 months of exposure, at about 5° C., to 0.5 per cent phenol, 0.25 per cent tricresol, or 0.2 per cent formalin. In fact, the preparations of Vi extract containing these preservatives maintained their potency

TABLE 7

Effect of Extreme Heat (Autoclave) on Vi Extract

Amount of Immunogenic Substance Administered per Mouse (ml.)	Results of Injecting 50,000 Typhoid Organisms into Mice Which Had 7 Days Previously Received the Amounts Indicated in Column on Left of the Substances Designated Below (No. of Deaths/ No. of Mice)	
	V-Ex-4 (Unheated Control)	V-Ex-4 (Autoclaved)
0.005	0/4	0/4
0.0005	0/4	0/4
0.00005	0/4	2/4
0.000005	0/4	3/4
0.0000005	3/4	4/4
0.00000005	4/4	4/4

TABLE 8

Effect of Heat (100° C.) on Vi Extract

Condition of Immunizing Substance (V-Ex-M)	*Combined Results of 3 Comparative Tests Wherein 50,000 Typhoid Organisms Were Injected into Mice Which Had 7 Days Previously Received the Amounts (ml.) Indicated Below of the Substances Designated in Column on Left (No. of Deaths/No. of Mice)*			
	0.005	*0.0005*	*0.00005*	*Total Deaths*
Raw HCl Sol. (Control)	0/18	0/18	11/18	11/54
Raw HCl Sol. (Heated)	0/18	2/18	10/18	12/54
Neut. HCl Sol. (Control)	0/18	1/18	10/18	11/54
Neut. HCl Sol. (Heated)	0/18	0/18	8/18	8/54
Neut. HCl Sol. Phenolized (Control)	0/18	2/18	8/18	10/54
Neut. HCl Sol. Phenolized (Heated)	0/18	1/18	10/18	11/54

quite as well as the control material—which itself showed little change during the period of observation.

STABILITY TO HEAT

1. *Extreme Heat*

Autoclave (124° C.)—It is not anticipated that any biological product would be subjected to such mistreatment as autoclaving, but this information was sought merely as supplementary data on the properties of the Vi extract. The results of titrations of an autoclaved preparation have been recorded in Table 7. They indicate that considerable damage was done to the immunizing fraction of Vi extract. Any other result would have been contrary to our present concept of the chemical identity of immunogenic substances.

Boiling Water Bath (100° C.)—It is neither to be expected that biologicals will be exposed for any length of time to this temperature, but a breakdown of substances by heating to 100° C. for a short period would probably indicate deterioration over longer periods at a lower temperature. The Vi extract, represented in three forms, was immersed in a boiling water-bath for 30 minutes: (1) as the raw HCl solution, (2) as the neutralized solution, and (3) as the neutralized solution to which 0.5 per cent of phenol had been added. The results of titrations for immunogenic potency (recorded in Table 8) indicate that no significant changes were produced in any of these preparations by heating at 100° C. for 30 minutes.

2. *Moderate Heat*

Incubator (at 37.5° C.)—It is very likely that vaccines, particularly en route to their destination, will be subjected to this temperature for greater or lesser periods of time. The test to determine the effect of such exposure employed the Vi extract as a component of TAB vaccine (TABVi), approximately 2,000 TIU having been added per ml. of TAB. The results of titrations for immunogenic potency have been recorded in Table 9. They indicate that, at this temperature, deterioration of the antityphoid component of TAB vaccine is more evident than in the case of TABVi, the explanation probably being that Vi extract is less affected and that an excess of it in the dilutions of TABVi used compensates for the destruction of the antityphoid factor of the typhoid organisms.

Room Temperature (22° C.–26° C.)—It is expected that vaccines will be exposed for some time to ordinary room temperature, en route to their destina-

TABLE 9

Stability of Vi Extract in TAB Vaccine (TABVi) at 37.5° C.

Immunizing Substance	Period of Exposure at 37.5° C.	Results of Injecting 50,000 Typhoid Organisms into Mice, Which Had 7 Days Previously Received the Amounts (ml.) Indicated Below of the Substances Designated on the Left (No. of Deaths/No. of Mice)			
		0.05	0.005	0.0005	0.00005
TABVi	0 (Fresh)	0/8	0/8	2/8	6/8
	1 week	0/8	0/8	1/8	6/8
	2 weeks	0/8	0/8	1/8	8/8
TAB	0 (Fresh)	0/8	0/8	6/8	8/8
	1 week	0/8	2/8	6/8	8/8
	2 weeks	0/8	5/8	8/8	8/8

tion and while being used. Except through gross negligence, however, the total period of such exposure for any particular bottle of vaccine should not exceed 1 month. The relative keeping properties of TAB vaccine and phenolized Vi extract were determined, the conditions of storage (on shelf in office during June-July) being identical, while the materials were titrated simultaneously. The results of these titrations have been recorded in Table 10. They demonstrate that, stored at room temperature, the Vi extract is at least as stable as TAB vaccine.

STABILITY OF VI EXTRACT IN TAB VACCINE

Physical Stability — The physical stability of Vi extract in TAB vaccine—that is, its dependence upon the bacterial cells (adsorption) or its independence from cells (acting as a true solution) was briefly studied as a matter of interest.

The supernates of TAB vaccine, and of TAB to which Vi extract had been added 2 months previously (TABVi) were titrated, with adequate controls, for immunogenic potency. Details and results of these titrations have been

TABLE 10

Relative Stability of Vi Extract and TAB Vaccine at Room Temperature

Designation of Immunizing Substance	Amount of Material Administered per Mouse (ml.)	Results of Injecting 50,000 Typhoid Organisms into Mice Which had 7 Days Previously Received the Amounts Indicated in 2nd Column of the Substances Designated in 1st Column, After the Various Periods of Storage at Room Temperature Indicated Below (No. of Deaths/No. of Mice)		
		0 (Fresh)	2 Weeks	4 Weeks
V-Ex-M-2	0.005	0/7	0/8	1/8
	0.0005	1/7	0/8	0/8
	0.00005	6/7	7/8	7/8
TAB	0.05	0/7	0/8	0/8
	0.005	0/7	0/8	2/8
	0.0005	3/7	6/8	6/8

TABLE 11

Physical Stability of Vi Extract in TAB Vaccine (TABVi)

Basic Immunogenic Material	Fraction Used	Results of Injecting 50,000 Typhoid Organisms into Mice Which Had 7 Days Previously Received the Materials Indicated on the Left in the Amounts (ml.) Set Forth Below (No. of Deaths/No. of Mice)			
		0.05	0.005	0.0005	Totals
TAB	Supernate	0/6	1/6	6/6	7/18
	Resuspended	0/6	5/6	6/6	11/18
	Whole	0/6	2/6	4/6	6/18
TABVi	Supernate	0/6	0/6	0/6	0/18
	Resuspended	0/6	1/6	5/6	6/18
	Whole	0/6	0/6	1/6	1/18

recorded in Table 11. From these results, it appears that Vi extract, mixed with TAB vaccine, maintains essentially an independent existence in the suspending fluid. Some adsorption to bacterial cells does seem to take place, but to a very slight extent and at a very slow rate.

Immunogenic Stability—This topic was discussed above under the heading of "Stability to Heat—Moderate Heat —Incubator at 37.5° C.," with results entered in Table 9.

TOXICITY OF VI EXTRACT

As would be expected, Vi extract is a toxic substance. The critical question is: To what extent would the addition of an effective concentration of Vi extract to TAB vaccine increase the frequency and severity of clinical reactions?

In testing this substance for toxicity in laboratory animals, it was found that although 16 to 18 gm. mice tolerated an intraperitoneal injection of 0.5 ml. (approximately 10,000 TIU), 3 kg. rabbits were invariably killed by this dose when intravenously administered. With such a wide divergence in species susceptibility, there was no way of predicting the toxicity of Vi extract for man except to employ man as the experimental animal.

Accordingly, the author was injected with trial amounts to explore their effect in a somewhat sensitized individual. From the slight local reactions which resulted, and the absence of any systemic manifestation, it was estimated that 200 TIU would be comfortably tolerated by less sensitized persons. Eleven volunteers were thereupon injected intradermally with 200 TIU contained in 0.1 ml. of the preparation. This amount is the immunogenic equivalent of 1.0 ml. of monovalent typhoid vaccine.

In all cases, there was some degree of erythema surrounding the site of injection, with slight to moderate tenderness in the central area, at the end of the first 24 hour period. The hyperemic areas ranged in diameter from 2.5 cm. to 5.0 cm.—averaging less than 10 sq. cm.[2] The intensity and extensiveness of these reactions were appreciably less than those generally produced by 0.1 ml. of typhoid or TAB vaccine. In all instances, objective and subjective symptoms rapidly subsided during the second 24 hour period. Neither lymphadenitis nor systemic reactions of any description were experienced by the participants.

DISCUSSION AND RECOMMENDATIONS

Vi extract, prepared as described in

this paper, lends itself well to use as an auxiliary immunizing substance for typhoid or TAB vaccine. It is easily prepared and standardized; it is chemically and physically stable in the presence of commonly used preservatives, and it is appreciably less toxic than an immunogenically equivalent amount of typhoid vaccine. Added in small amounts to TAB vaccine, Vi extract increases significantly the antityphoid potency over that possessed by the vaccine alone, as measured by active immunization tests in mice.

It is realized that active mouse protection bears a problematical relationship to the protection of man against infection, and that these experiments must ultimately be confirmed in man. In our experience, however, those agents which were the more potent as measured by active immunization tests in mice proved to be the more active in man as measured by serum protection tests. This still falls short of field tests, but it is the best method of laboratory evaluation available.

Despite the feasibility of fortifying TAB vaccine with Vi extract and the consequent gain in antityphoid immunogenicity, the addition of this extract to TAB vaccine of the present bacterial content and mandatory dosage is not recommended. Because of the occasional incapacitating reaction and the more frequent annoying reactions resulting from administration of the prescribed dosage of the currently prepared TAB vaccine, it is believed that any manipulation of the vaccine should be toward a product (or dosage) equally effective immunologically but less provocative of clinical reactions. The addition of Vi extract to the presently prepared TAB vaccine, without any modification of dosage, could, conceivably, aggravate an already undesirable feature of typhoid-paratyphoid vaccination.

Among the alternative procedures, there are two that warrant investigation: One is to reduce the "T" component of TAB vaccine and add Vi extract in a compensatory measure; the other is to add Vi extract to the present TAB product, and reduce the dosage. Since an investigation of the effect and effectiveness of a reduced dosage of TAB vaccine (three 0.5 ml. doses) is already in progress here, it has been decided to await the findings of this investigation before taking any steps toward fortifying TAB vaccine with the Vi extract.

Another project involving the use of Vi extract to be opened in the near future is its use in combination with immunogenic fractions of the typhoid bacillus—such as Wakeman's polysaccharide [4] or Morgan's "purified antigen," [5] for the purpose of augmenting these products with the important Vi fraction which is destroyed or diminished in their preparation.

SUMMARY

The extraction of Vi antigen from *S. coli* 5396/38 organisms with 1 per cent HCl is described.

The Vi extract was found to be immunogenically more potent than conventionally prepared antigenic fractions of the typhoid bacillus when titrated by active immunization tests in mice.

The Vi extract was found to be stable in the presence of preservatives commonly used for biologicals (phenol, tricresol, and formaldehyde) and under conditions of handling and storage usually applied to biologicals.

In a few experimental subjects, an amount of Vi extract immunogenically equivalent to 1 ml. of typhoid vaccine (200 TIU) administered intradermally, was found to produce a mild local reaction with no accompanying systemic manifestations.

The addition of Vi extract to TAB vaccine under present conditions of bacterial content and prescribed dosage is

not recommended because of the potential increase in frequency and severity of clinical reactions following the use of such a combination. A study of the effect and effectiveness of reduced dosage of TAB vaccine is now in progress, and a decision of how Vi extract will be used is pending the outcome of this study.

It is also planned to combine Vi extract with conventionally prepared immunogenic fractions of the typhoid bacillus, and to compare this combination with a bacterial vaccine in respect to immunological responses and clinical reactions.

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Proposed Diabetic Survey

A coöperative project is being conducted in Philadelphia to x-ray the chests of persons in the city having diabetes. The cost of the survey will be borne by the Philadelphia Tuberculosis and Health Association. The appointment of necessary committees is under the guidance of the Philadelphia County medical committees on diabetes and tuberculosis, together with the X-Ray Survey Committee of the Philadelphia Tuberculosis and Health Association.

At the meeting September 24 at the Philadelphia County Medical Society, physicians interested in diabetes and tuberculosis discussed the various aspects of the survey, bringing out that it would be invaluable in shedding light on certain concepts long held regarding the response of diabetic patients to tuberculosis. It was further brought out that a mass survey might confirm or refute the concepts that hilar and basal sites are more frequently involved in tuberculous diabetic patients. The recording of simple data relevant to nutritional status might illumine the question as to whether or not nutritional status is one of the major factors in the increased susceptibility of diabetic patients to tuberculosis. It is proposed to divide the city into districts, installing a mobile x-ray unit in suitabily located central hospitals for the x-ray examination of the diabetic patients in the vicinity and of non-diabetic outpatient controls.

Age and Sex Variations in the Prevalence and Onset of Diabetes Mellitus

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IN this paper, there are presented estimates of the sex and age distribution of the existing diabetic population in the United States, of the new diabetics expected each year, and of those in the population who may eventually become diabetic.

PREVALENCE

In preparing the estimates which form the basis for this paper, use was made of the findings of the National Health Survey in regard to diabetes prevalence. This survey was conducted during the winter of 1935–1936 under the auspices of the U. S. Public Health Service.[1] It covered 2,500,000 white and colored persons living in 700,000 households in 83 cities and was so planned as to constitute a sample representative of the general urban population of the United States. Morbid conditions were recorded by trained enumerators as they were reported by a member of the household. Wherever possible, an effort was made to confirm the diagnoses by referring to the physician in attendance. Through the courtesy of George St. J. Perrott, Chief, Division of Public Health Methods, National Institute of Health, there have been made available unpublished data regarding diabetes prevalence which form the basis for this paper.[2] These data are shown in Table 1.

TABLE 1

Cases of Diabetes Mellitus per 1,000 Persons of Specified Sex and Age, National Health Survey, 1935–1936

	Males			Females		
Age	*Population Covered*	*Cases of Diabetes*	*Cases per 1,000 Persons*	*Population Covered*	*Cases of Diabetes*	*Cases per 1,000 Persons*
All ages	1,201,992	3,285	2.73	1,300,399	5,897	4.53
Under 15	303,207	105	0.35	299,607	124	0.41
15–24	206,696	129	0.62	239,673	136	0.57
25–34	196,845	178	0.90	228,456	247	1.08
35–44	191,157	385	2.01	204,368	646	3.16
45–54	151,540	680	4.49	151,468	1,309	8.64
55–64	87,647	873	9.96	95,107	1,731	18.20
65–74	46,380	702	15.14	55,787	1,328	23.80
75–84	15,067	212	14.07	19,790	341	17.23
85 and over	2,189	14	6.40	3,196	22	6.88
Unknown	1,264	7	5.54	2,947	13	4.41

Quality of the data: It is possible to obtain some light on the quality of the data by comparing them with another experience, namely, the Massachusetts

NOTE: The writers are indebted to Drs. Louis I. Dublin and Alfred J. Lotka for encouragement and advice in the conduct of this study.

survey made by Bigelow and Lombard during 1929–1931.[3, 4] Inspection of Table 2 shows that, on the whole, the incidence of diabetes observed in the National Heath Survey was somewhat greater than that in the Massachusetts survey.* The largest deviation between the two experiences is found among males of ages 70 to 79, and here it would seem that the Massachusetts figure is too low, a situation which may arise from the chance fluctuation of the small sample involved. Although the prevalence of diabetes may have increased from 1929–1931 to 1935–1936, the higher rates of the later period may also suggest better reporting in the National Health Survey than in the Massachusetts survey. In any event, the differences between the two experiences, on the whole, are not very great. They essentially confirm each other.

TABLE 2

Cases of Diabetes Mellitus per 1,000 Persons of Specified Sex and Age, National Health Survey, 1935–1936, and Massachusetts Survey, 1929–1931

	Males		Females	
Age	*National Health Survey 1935–1936*	*Massachusetts Survey 1929–1931*	*National Health Survey 1935–1936*	*Massachusetts Survey 1929–1931*
40–49	3.1	4.2	5.5	5.0
50–59	6.8	6.6	13.1	15.1
60–69	12.8	10.3	21.8	17.2
70–79	15.8	10.4	22.7	19.0
80 and over	11.2	10.0	11.4	14.0

Commenting on the quality of the data from the National Health Survey, Mr. Perrott [2] said, "I am inclined to believe that if the informant knew a person had diabetes, she would usually report that fact, even though the person were able to work. On the other hand, some such cases were naturally missed. Also, there would be cases unknown to the informant. . . . It seems evident that any esimate of the amount of diabetes present, based on information of this type, would be an understatement."

For the basic computations on the onset of diabetes according to sex and age, the data in Table 1 were used without adjustment. It is evident, therefore, that these data will provide minimum estimates of the situations considered. This is an important qualification of these estimates because in an appreciable number of cases diabetes exists in a form so mild that it may go undiagnosed or its diagnosis may be considerably delayed. As Joslin [5] has pointed out, "Diabetics developing the disease after the age of 60 exhibit it generally in mild form; the exact time of onset of diabetes in older patients is not as easily ascertainable as in younger diabetics because the condition develops more insidiously."

Fortunately, trial computations of these data show that any assumed percentage of understatement, even as high as 25 per cent, in the observed prevalence rates, provided it is invariant with sex and age, affects the onset rates emerging from our computations by practically the same percentage. It follows then that the rate of prevalence and annual onset and the chances of eventually becoming diabetic, as presented in the following pages, may be increased by any flat percentage considered appropriate to allow for any understatement in the observed data. No detailed consideration was given, however, to percentage allowances which

* For the purpose of this comparison, it was necessary to adjust the data of the National Health Survey by interpolation to the age grouping in which the data of the Massachusetts survey were presented.

TABLE 3

Diabetes Prevalence Rates, Diabetes Onset Rates (Rate at Which New Cases Arise among Non-Diabetics per Annum), and Chances of Eventually Becoming Diabetic, According to Sex and Age, United States, 1935–1936

Age	Diabetes Prevalence Cases per 1,000 Population National Health Survey		Diabetes Onset—New Cases per Annum per 100,000 Non-Diabetic Population		Chances per 1,000 of Eventually Becoming Diabetic	
	Males	Females	Males	Females	Males	Females
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Under 15	0.4	0.4	*	*	22.1	41.5
15–19	0.6	0.6	*	*	22.4	42.0
20–24	0.7	0.7	2.8	3.8	22.6	42.3
25–29	0.7	0.8	5.8	10.0	22.8	42.6
30–34	1.1	1.4	11.0	19.6	22.8	42.6
35–39	1.6	2.4	16.4	31.9	22.7	42.2
40–44	2.4	4.0	24.6	53.7	22.4	41.3
45–49	3.8	7.1	39.6	82.2	21.9	39.4
50–54	5.3	10.5	71.6	130.6	20.7	36.2
55–59	8.6	16.1	101.7	179.5	18.1	30.7
60–64	11.8	20.9	114.8	198.1	14.8	23.8
65–69	14.1	23.0	125.1	201.2	11.3	16.6
70–74	16.6	24.9	113.3	162.4	7.7	10.0
75–79	14.5	19.1	99.0	115.0	4.6	5.2
80–84	13.2	13.5	65.9	66.5	2.0	2.0
85–89	6.4	7.1	20.1	19.7	0.4	0.4

* Onset rates were not computed at these ages in view of the small numbers involved in the basic data.

would vary with sex and age, because the results obtained from such allowances would not have a simple arithmetic relationship to those derived from the basic data.

Age and sex characteristics of diabetes prevalence rates: According to the National Health Survey, there were at least 3.67 diabetics per 1,000 persons in our urban communities in 1935–1936. Among males, 2.73 out of every 1,000 were diabetic, while among females the rate was appreciably greater, namely, 4.53 per 1,000. The rates for each sex rise steadily with increase in age, from low points, at ages under 15, of 0.35 per 1,000 males and 0.41 per 1,000 females to maxima in the age group 65 to 74 years, the rates here being 15.14 per 1,000 males and 23.80 per 1,000 females. At ages 85 and over, the rates for both sexes are somewhat over 6 per 1,000. The data supplied have been interpolated to provide diabetes prevalence rates for quinquennial age groups, as shown in Table 3, columns 2 and 3.

Along with the changes just described, there are correspondingly rapid changes in the sex ratio of diabetes incidence with increase in age. Thus, under age 25, the rates for the two sexes are not much different; at ages 25 to 34 years, the females are higher by 20 per cent, at ages 35 to 44 by almost 60 per cent, and at ages from 45 to 64, their rates are almost double those for males. After age 65, the differential between the two sexes diminishes, the females being higher by almost 60 per cent at ages 65 to 74, by about 20 per cent at ages 75 to 84, and practically the same as that for males at ages 85 and over.

Age and sex distribution of diabetics: If it is assumed that the diabetes prevalence rates according to sex and age, as observed in the National Health Survey, prevailed in the general population of the United States during 1940, then there were *at least* 500,000 diabetics in the country during that year and their sex and age distribution was as shown in Table 4, columns 2 and 3. Males then constituted 38.5 per cent of the total cases and females 61.5 per cent. Over one-quarter of the total was under age 50, one-quarter was be-

TABLE 4

Estimated Number of Existing Diabetics, New Diabetics, and Potential Diabetics in the 1940 Population of the United States, by Sex and Age *

Age	Existing Diabetics		New Diabetics During 1940		Potential Diabetics	
	Males	Females	Males	Females	Males	Females
(1)	(2)	(3)	(4)	(5)	(6)	(7)
All Ages	196,400	313,000	18,800	31,100	1,376,000	2,497,000
Under 15	6,600	6,600	800†	800†	370,000	675,000
15–19	3,700	3,700	200†	200†	139,000	259,000
20–24	3,900	4,200	200	200	129,000	249,000
25–29	4,000	4,500	300	600	124,000	240,000
30–34	5,500	7,100	600	1,000	115,000	220,000
35–39	7,800	11,500	800	1,500	107,000	202,000
40–44	10,700	17,400	1,100	2,400	99,000	180,000
45–49	15,900	28,800	1,700	3,300	92,000	158,000
50–54	20,000	36,700	2,700	4,500	77,000	125,000
55–59	26,000	45,700	3,000	5,000	54,000	86,000
60–64	28,200	48,600	2,700	4,500	35,000	54,000
65–69	26,800	44,000	2,400	3,800	21,000	31,000
70–74	21,100	32,300	1,400	2,100	10,000	13,000
75–79	10,500	14,900	700	900	3,000	4,000
80–84	4,700	5,600	200	300	1,000	1,000
85+	1,000	1,400	....	....	....	....

* Based upon the rates shown in Table 3 and the United States census of population, April 1, 1940.
† Assumption based upon estimate of existing diabetics.

tween 50 and 60, and a little under half was at ages 60 and over. The peak, for quinquennial age groups, is found at ages 60 to 64 years, the males in this age group constituting 5.5 per cent of the total diabetic population and females 9.5 per cent. The average age of male diabetics was 55.6 years, and of the females, 56.7 years.

The foregoing estimate of a minimum of 500,000 diabetics in 1940 may be compared with several other estimates. In a review of diabetes incidence in the United States in 1930, Joslin, Dublin, and Marks [3] estimated the number of diabetics as 400,000 at the most. For this estimate, they made use of the diabetes prevalence rates, specific for sex and age, as observed in the Massachusetts survey. More recently, the U. S. Public Health Service issued an estimate of 660,000 diabetics in the United States in 1937, basing its figure upon the findings of the National Health Survey, with an adjustment for under-enumeration.[6] Their method involved multiplication of the crude overall diabetes prevalence rate observed in the Survey, by the total United States population for 1937. To adjust for under-enumeration, the result was then "multiplied by the ratio of the 1935 death rate [from diabetes] in the United States (Bureau of the Census) to the Health Survey death rate." Both of these steps may introduce a bias toward too high an estimate. In the first place, the crude overall diabetes prevalence rate of the Survey is influenced in an upward direction by the fact that the Survey population contains an appreciable excess of females who, by themselves, have a higher prevalence rate than males. The crude prevalence rate based upon the National Health Survey, therefore, is hardly applicable without downward adjustment to the total population of the United States in 1937, in which males exceeded females in number. Second, the use of the ratio of the 1935 diabetes death rate in the whole country to that found in the Survey may lead to an over-correction. Since the deaths reported in the Survey were obtained by questionnaire, it is possible that deaths from diabetes were understated to a greater extent than cases. The cases reported were alive

on the day of the census, whereas the deaths may have occurred at any time within the preceding year, with a consequent increase in liability to error in reporting. The Public Health Service estimate for the number of diabetics in the country as a whole may be too high for another reason: namely, that the National Health Survey, of which they made use, represents the situation in an urban population, whereas indications are that the prevalence of diabetes, age for age, is lower in rural than in urban areas.[3, 7]

An estimate prepared by one of us (M. S.) for Joslin in 1939 yielded a figure of 1,000,000 diabetics for 1950. This was based upon an assumption of an average duration of 20 years from onset of diabetes to death; the assumption now appears to have been rather optimistic for the general population.[8]

GROWTH OF THE DIABETIC POPULATION

The outlook for the next few decades is that the number of diabetics will increase at a much greater rate than the population, and that the problem of diabetes will gain in importance. If it is assumed that the course of the diabetes prevalence rates according to sex and age as observed in the National Health Survey remain unchanged, then it is expected that the number of diabetics will increase by 18 per cent in the decade from 1940 to 1950, while the total population may grow only by 9 per cent. Present indications are that our total population will be at a maximum about 1985, when it will be 22 per cent greater than it was in 1940*; however, over the same time, the diabetic population may increase by 74 per cent. The more rapid increase of the diabetic population than of the total population arises from two factors: first, the ever-increasing proportion of persons at the older ages; second, the more rapid increase in the number of females than of males at these ages.

In accepting the assumption that the course of the diabetes prevalence rates, according to sex and age, as observed in the National Health Survey, will continue to prevail without change, it is realized that no allowance is being made for the effect that organized efforts to make the general practitioner and the lay public more diabetes conscious may have upon future prevalence rates. It is quite likely that as these efforts become more successful, there will be an increase in diabetes case finding. Another factor that may raise the prevalence rates is the likelihood of further increases in the after-lifetime of diabetics beyond those already observed. It is obvious that by lengthening the life of diabetics, the proportion of them in our midst will increase. Still another consideration arises from the trend of our standard of living. As it continues to higher levels and is accompanied by a further increase in food consumption beyond the lessened physical requirements which result from our growing mechanization, the prevalence of diabetes may also show an upward trend. Although research is under way at present on the prevention of diabetes, the outlook for practical results appears too remote to warrant, at this time, the assumption of a favorable effect on future diabetes prevalence.

NEW DIABETICS

The data of the National Health Survey, together with information regarding mortality among diabetic patients of the George F. Baker Clinic during 1926 to 1929 reported by Joslin, Dublin, and Marks,[9] provide the material with which it is possible, by a suitable actuarial technique, to esti-

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* These estimates are based upon the "medium" forecast of population published by Thompson and Whelpton in *Estimates of the Future Population of the United States, 1940–2000*, National Resources Planning Board, Washington, D. C., 1943, Table 7, p. 68.

mate the age and sex distribution of persons becoming diabetic during the course of a year.* Although the mortality experience among the patients of the George F. Baker Clinic relates to a period somewhat earlier than the Survey, it is believed suitable for the present computations. The fact that the mortality experience of the Baker Clinic antedates somewhat the period of the National Health Survey is an actual advantage, as there would naturally be a lag between the results obtained in a large metropolitan medical center and the corresponding situation in the country as a whole, where treatment is sometimes inadequate or carried out under adverse conditions. Furthermore, the years 1926 to 1929 are at a sufficiently late date to insure that there was at that time already familiarity with the management of diabetics on insulin therapy, and the drug was in wide use.

Age and sex characteristics of diabetes onset rates: The first result emerging from the computations was a series of diabetes onset rates specific for sex and age—that is, a table of figures showing, for each sex and age, the chances that a non-diabetic will acquire the disease within one year. The results are shown for quinquennial age groups in Table 3, columns 4 and 5. As indicated earlier, the results represent the situation at a minimum. Correction for understatement in the Survey would give proportionally higher figures at each age.

An increase in diabetes onset with advance in age is apparent quite early in life; among young adults of ages 20 to 24 years, new cases arise annually at the rate of 2.8 per 100,000 for males and 3.8 per 100,000 for females. The onset rates mount with an accelerating rapidity up to about age 55—more so for women than for men. Thus, in the age group 55 to 59 years, males acquire the disease at a rate of 102 per 100,000 or about 35 times the rate at ages 20 to 24, while females of ages 55 to 59 have a diabetes onset rate of 180 per 100,000, or about 45 times that of ages 20 to 24. After age 55, the diabetes onset rates increase at a less rapid pace and reach a peak rate of 125 per 100,000 males at ages 65 to 69 years, and a rate of 201 per 100,000 females of the same ages. The decrease in diabetes onset rates thereafter is quite rapid; for example, at ages 80 to 84, the annual onset rates for both males and females were about 66 per 100,000 persons. In this connection, attention is again called to the uncertainty of the time of onset of diabetes at the older ages.

The relative susceptibility of males and females to diabetes may be measured by the ratio of the onset rate for females to that for males of the same age. Thus, the ratio of the onset rates for females to males increases to a maximum of 2.2 at ages 40 to 44 years, and thereafter decreases, so that a ratio of 1.6 is found at ages 65 to 69 years, while after age 75 the rates of onset in the two sexes are not very different. The great acceleration in diabetes onset among females on approach of the menopause is indicative of the endocrine changes that are characteristic of that period of life.

Age and sex distribution of new diabetics: On the basis of the foregoing diabetes onset rates specific for sex and age, it is estimated that at least 50,000 persons in the United States became diabetics during 1940; about three-eighths were males and a little under five-eighths were females. The distribution of the new diabetics during 1940 according to sex and age is shown in Table 4, columns 4 and 5. Somewhat more than one-quarter of the new diabetics acquired the disease at ages under 50 years; almost one-half fell into the

* A brief outline of the method employed is given in a note at the end of this paper.

relatively narrow range from 50 to 64 years; and the remaining quarter were at ages 65 and over when they became diabetic. The average age of the new diabetics in 1940 was somewhat over 54 years for both sexes.

If we assume that the course of the diabetes onset rates according to sex and age as found in this paper remains unchanged in the future, then the new diabetics in 1950 will be 18 per cent greater than in 1940, and those in 1985 will be greater by 67 per cent. These increases are much greater than those of the total population. As in the case of the estimates of the total number of diabetics, the increases in the annual number of new cases arise from the growth of total population, from the increasing proportion of older persons, and from the increasing proportion of females in the population.

EVENTUAL DIABETICS IN THE POPULATION

Chances of eventually becoming diabetic: With the annual diabetes onset rates specific for sex and age computed in the manner described, and with an appropriate life table, it is a relatively simple matter to compute the chances that a man or a woman of any age will eventually become diabetic. The life table used for this purpose was based upon the mortality experience of white persons in the general population of the United States during 1935, this year being sufficiently close to the period of the National Health Survey. The results of the computation are shown in Table 3, columns 6 and 7.

Two characteristics become apparent from an examination of these data. In the first place, up to age 50, the chances of eventually becoming diabetic for females are almost twice those for males. Second, the chances rise very slowly from birth to a maximum at age 30, fall gradually until about age 50, and then fall quite rapidly at the higher ages. Thus, among females, the chances of eventually becoming diabetic increase to a peak rate of 42.6 per 1,000 at age 30, then fall to 23.8 per 1,000 at ages 60 to 64, and to 10.0 per 1,000 at ages 70 to 74. In the case of males, the peak in the probability of eventually becoming diabetic is 22.8 per 1,000 at age 30, while in the age group 60 to 64 years, the figure is 14.8 per 1,000. In short, of our population under age 50, over 4 per cent of the females and more than 2 per cent of the males will become diabetic sometime during the course of their lives. These chances of eventually becoming diabetic are greater than the chances of eventual death from the disease since many diabetics die from other causes.

Age and sex distribution of the potentially diabetic population: An estimate of the age and sex distribution of eventual diabetics in the population at the census of 1940 is easily obtained. It simply calls for the multiplication of the numbers of the population (less those already diabetic), subdivided by sex and age, by the corresponding chances of eventually becoming diabetic. On this basis, it is found that at least 3,873,000 of those in the population of 1940 may eventually become diabetic; their age and sex distribution is shown in Table 4, columns 6 and 7. Of the total, 35.5 per cent are males and 64.5 per cent are females. About one-quarter of the number in the 1940 population who may eventually become diabetic will be found at ages under 15, and almost half are between the ages of 15 and 40.

SUMMARY

1. Using the diabetes prevalence rates according to sex and age as observed in the National Health Survey, it is estimated that there were *at least* 500,000 diabetics in the United States in 1940. Almost two-fifths of the diabetics were males and over three-fifths were

females. One-half of the total diabetics were at ages 60 and over.

2. During the next few decades, the number of diabetics in the United States will increase at a much greater rate than the total population. From 1940 to 1950, an increase of 18 per cent may be expected in the number of diabetics, while the total population is expected to grow only by 9 per cent.

3. At least 50,000 persons in the United States became diabetic during 1940; about two-fifths were males and three-fifths females. Not quite half were under 55 at the onset of their diabetes; somewhat more than one-quarter became diabetic between ages 55 and 64; and one-quarter were at ages 65 and over when they developed the disease.

4. Of our population under age 50, over 4 per cent of the females and more than 2 per cent of the males will eventually become diabetic.

NOTE ON METHOD

This note outlines the procedure followed in arriving at the diabetes onset rates.

In a stationary (life table) population let

l_x = number who live to attain age x

r_x = proportion of persons at age x with diabetes

$l_x^a = r_x \cdot l_x$ = number of diabetics attaining age x

i_x = number becoming diabetic during the year of age x to $x+1$

q_x^a = chance, per head, that a diabetic just attaining age x will die *from any cause* within the year of age

d_x^a = number of deaths *from any cause* at age x to $x+1$ among diabetics in the stationary population

Then

$$(1)\quad l_x^a + i_x - d_x^a = l_{x+1}^a$$

Assuming that the new diabetics at age x to $x+1$ were exposed to the risk of death as diabetics at that age for one half year on the average, and further, that their mortality was not different from that of those already diabetic, we have

$$(2)\quad d_x^a = q_x^a \left(l_x^a + \tfrac{1}{2} i_x\right)$$

Substituting (2) in (1) and solving

$$i_x = \frac{l_{x+1}^a - l_x^a(1 - q_x^a)}{1 - \tfrac{1}{2} q_x^a}$$

The chance that a non-diabetic of age x will become diabetic within the course of the year of age is

$$p_x^a = \frac{i_x}{l_x - l_x^a}$$

The chance of eventually becoming diabetic at or after age x is

$$\frac{\sum_{t=0}^{t=\infty} i_{x+t}}{l_x - l_x^a}$$

The life tables used were those for white males and white females in the general population of the United States in 1935.

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Outbreak of Typhoid Fever with Orange Juice as the Vehicle, Illustrating the Value of Immunization

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A SMALL localized epidemic of typhoid fever occurred in the E home, a residential hotel for business women, in Cleveland, Ohio, during January, 1944. Approximately 360 young women including 150 SPARS lived in the Home, among whom 18 cases of typhoid fever developed with 1 death. The outbreak is interesting because of the unusual vehicle of the infection and because it affords an opportunity to observe the influence of vaccination against *Eberthella typhosa*.

The first hint of the epidemic came on January 16, 1944, when a private physician notified the Division of Health that he was treating two young women suffering from fever of unknown origin. The first of these had been hospitalized on January 5, the second on January 14. Both were residents of the E Home. On January 16, a third resident was hospitalized with similar symptoms. On January 17, blood serum from the first patient agglutinated *E. typhosa* in a relatively high titer (*H* 1:640, *O* 1:2560).

Epidemiological investigation was begun on January 18. Stool cultures and blood specimens were obtained immediately from all individuals who had had any contact with food handling since November 1, 1943, including those who had left the service of the hotel. A plumbing survey was instituted and water samples from outlets on every floor were examined. Serving of food within the hotel was discontinued on January 19. All guests and employees were checked daily for suspicious symptoms.

Letters were sent to all former guests who had resided at the Home during December and January with the request that the Division of Health be notified of any illness occurring within 30 days of departure from the Home. Replies were received from 23 of 49 letters sent. Information obtained revealed that 3 cases had occurred in this group, 1 of which had terminated fatally.

The dates of onset of the 18 reported cases were as follows:

Onset	*Cases*	*Onset*	*Cases*
December 31, 1943	1	January 13, 1944	1
January 5, 1944	1	15, "	1
6, "	1	17, "	1
8, "	2	18, "	1
9, "	1	19, "	1
10, "	1	20, "	2
11, "	2	28, "	1
12, "	1		
		Total	18

In 12 of the 18 cases, blood cultures and Widals were positive. In 5 others, Widals and stool cultures were positive. For one out-of-town case, blood, stool, and urine cultures were negative, but the Widal reaction was positive (*H* 1:40, *O* 1:160).

The attack rates for the civilian group and the SPARS are given by age in Table 1.

TABLE 1

Age-specific Attack Rates from Typhoid Fever for Civilians and SPARS

	Civilians			*SPARS*			*Total*		
Age in Years	*Number Exposed*	*Number Attacked*	*Per cent Attacked*	*Number Exposed*	*Number Attacked*	*Per cent Attacked*	*Number Exposed*	*Number Attacked*	*Per cent Attacked*
18–19	22	1	4.5	0	0	....	22	1	4.5
20–29	131	14	10.7	136	1	0.07	267	15	5.6
30–39	24	2	8.3	13	0	0.00	37	2	5.4
40+	2	0	0.0	0	0	....	2	0	0.0
Unknown	15	0	0.0	32	0	0.00	47	0	0.0
Total	194	17	8.8	181	1	0.06	375	18	4.8

Results of all water analyses were negative. Three consecutive stool cultures taken not less than 24 hours apart and Widal tests were negative for all but one of the 25 persons handling food. This person was a colored female with a negative history of typhoid fever. Her first stool specimen taken on January 23 was positive for *E. typhosa*. On January 24 the Widal for this individual showed for the *H* antigen plus-minus in dilution of 1:80 and for the *O* antigen positive in dilution of 1:160. Following a second positive stool culture for this individual, she was hospitalized for further study. Positive stool cultures were obtained in the hospital on February 1, 2, 4, and 25.

This woman was first employed by the Home on September 13, 1943, as a dishwasher working only from 6 to 9 A.M. Until December 15 she did nothing but wash dishes. On that day she was given the task of preparing the orange juice for breakfast. She alone prepared orange juice from that date until December 25, at which time she was given assistance, so that from December 25 to January 16, when she quit her job, she prepared only part of the orange juice. She began preparation of the juice when she first arrived in the morning. The juice was allowed to stand at room temperature until served. Careful questioning, both of the woman herself and of other employees, could elicit no evidence of other contact on her part with any food served, nor was any evidence obtained which would incriminate other articles of food.

SPARS and civilians breakfasted together in the cafeteria. All of the 15 local cases customarily ate breakfast at the hotel.

Fourteen stated that they drank orange juice regularly for breakfast. One girl did not remember whether she had had any during the preceding month. However, the proportion of the non-cases eating breakfast at the hotel who drank orange juice was also high. Out of 220 questioned 199 gave such history. Notwithstanding this fact, it was concluded that orange juice must have been the vehicle.

The distribution of the dates of onset did not suggest a mass infection at one time. There was a proved carrier responsible for only one article of food, orange juice. All but one of the local cases were known to have consumed orange juice. As supporting evidence, orange juice was inoculated with typhoid bacilli isolated from the carrier and incubated at room tempera-

ture. Viable bacilli were recovered up to 6 days after inoculation.

Vaccination records were available for only 143 of the 181 SPARS who were known to have resided at the Home during December and January. The balance had been transferred to other posts and no attempt was made to obtain their records. It may be assumed, however, that all had been vaccinated. Of the 143, all had been immunized against *E. typhosa* since February, 1943, but 12 had received their last dose during October or November. The only case occurring among the SPARS was in an individual in this group who had received her last dose on November 30, 1943. The onset date for this case was given as January 20, less than 2 months later.

Information regarding vaccination was obtained from 194 civilians living in the Home. Seven of these individuals had had a previous attack of typhoid fever. Of 27 who claimed to have had 3 doses of typhoid vaccine 13 had been vaccinated prior to 1941 and 14 subsequently. One claimed to have only one dose and 2 did not know how many doses had been given. No cases occurred among those with history of a previous attack or with history of any vaccination. Seventeen cases occurred among the 140 remaining members of the group.

Combining the two groups and omitting the 7 who had had previous attacks, there were 368 individuals for whom immunization histories were known. If all persons giving history of immunization, regardless of the number of doses or date on which it was given, be considered as immunized, there were 211 immunized persons. Among these only 1 case occurred. Among the 140 who were not immunized there were 17 cases, giving an attack rate of 12.1 per cent. If the immunized had suffered this rate of incidence there would have been about 25 cases in the group. That such a difference could have occurred by chance is of course highly improbable. So far as could be ascertained the exposure of the two groups was on the average equal, accepting orange juice as the vehicle. It is concluded therefore, that the difference must be attributed to active immunization.

Placement Unit for Nurses

The United States Employment Servive has opened a counseling and placement office at 119 West 57th Street, New York, N. Y., for Army and Navy nurses and other veterans of the medical services of the armed forces. An advisory committee representing the fields of medicine, nursing, and public health is serving in a consultant's capacity to the new venture. Service is on a 24 hour basis and without charge to the registrant.

Approximately 50,000 persons from the New York City area have served in medical and health assignments in military service. Many will wish to find new positions on their return to civilian life, or to prepare themselves by additional education for a specialty. The U.S.E.S. is organized to give advice and information regarding special training under the G.I. Bill of Rights as well as to fill the needs of employers seeking qualified personnel.

Epidemiological Studies on Infectious Hepatitis*

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IT is largely due to the military importance [1–17] of infectious hepatitis that renewed interest has been stimulated in this disease. Numerous reports have recently described its prevalence, particularly in the Mediterranean area where it has occurred among American,[14, 16, 17] British,[6, 8, 11–13] Italian,[7] French,[1] and German [2–4] troops as well as the civilian population of Palestine.[18–20] Although the relationship is not known, there is no reason to believe that this type of infectious hepatitis differs from that seen in outbreaks of epidemic jaundice which have been noted in the United States,[21–23] or differs from the disease which has been frequently described as infective hepatitis in England,[24–26] or as *hepatitis epidemica* in Scandinavia,[27] Germany,[28, 29] and many other parts of the world. There is also no ready means of differentiating it from catarrhal jaundice [9, 10] except that the latter term has been reserved more for sporadic than epidemic cases. Furthermore, it is not clear whether post-vaccinal hepatitis,[30–36] transfusion jaundice,[37, 38] and homologous serum jaundice [39–49] may not all be examples of the artificial production of the same disease. The lack of susceptible laboratory animals and specific immunologic tests has made more difficult the solution of these obscurities. These and other questions are unsettled and deserve further study but on a few points at least there is agreement, namely, infectious hepatitis can be differentiated from spirochetal jaundice (Weil's disease) and from yellow fever; it also can be differentiated from the jaundice of infectious mononucleosis, of malaria, and certain other infections.

It is strange that a disease which is so common and has become so important from a military standpoint should have been so poorly defined until recently. Only a limited number of authors such as Blumer [21] and a few others [22, 23, 50] have called attention to the public health aspects of infectious hepatitis in this country.

It is the object of this paper to review these aspects in the light of new information and to mention experiments with human volunteers which are related to the epidemiology of the disease.

EPIDEMIOLOGY

Geographic Distribution: Reports of 19th century outbreaks cover a wide area and it is probable that infectious hepatitis occurs throughout the entire world, but in the absence of specific diagnostic tests its exact distribution is unknown. In 1923 Blumer [21] assembled information on many epidemics which had occurred in almost every section of the United States. Outbreaks have also

* Representing work done for the Neurotropic Virus Disease Commission of the Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army, in the Preventive Medicine Service of the Office of The Surgeon General, U. S. Army, Washington, D. C.

been reported from Iceland,[51] England,[24-26] Europe,[3, 53] Scandinavia,[52] Poland and Rumania,[2] India,[54] and Africa.[55] The eastern half of the Mediterranean area [6, 16, 17, 60] represents a region where this disease has been particularly prevalent among troops both in World Wars I and II with cases numbering in the tens of thousands in the years 1941–1944. Native populations either civilian or military, in the "epidemic areas" are usually less susceptible than are troops or immigrants from abroad. Little is known of the general climatic or exact environmental conditions which influence its spread, but at least these are not sharply limited to any particular latitude. It is universally agreed, however, that this disease flourishes best under poor sanitary conditions.

Season: In certain parts of the world there is a distinct and rather sharp seasonal trend with an increase in prevalence coming on in the fall of the year and often building up to epidemic proportions during late fall and early winter. The epidemic season is by no means limited to fall and early winter, however, for as has been the case in this country, it may begin in the fall and extend through the whole winter and well into the spring. The explanation of this seasonal trend is unknown.

Age: In the United States and many other areas, infectious hepatitis is commonly seen in the civilian population as a disease of childhood. The age group in which most of the epidemic cases fall ranges from 5 to 17 years. It is common enough too, however, among young adults, to which military epidemics, as well as outbreaks among university students testify. Inasmuch as the childhood form of this disease is very mild and easily overlooked, it has been suggested that infectious hepatitis is far more common than is usually realized, and that most adults have been exposed in early life and have even had the disease in unrecognized form, so that they have acquired a certain degree of immunity.

Epidemics: In civilian populations, outbreaks which involve several hundred people (usually children) over a period of one or two months are common. Institutional and family outbreaks are traditional. Favored sites are institutions, camps for children, and military camps. In orphan asylums, as many as one-quarter or one-third of the population may be infected. In families the usual sequence of events is, that one member first acquires the disease and then 3 or 4 weeks later it appears in one or more other members. Within military units the case rate can occasionally reach such proportions as 40 or 50 per cent of the total command. Such severe epidemics have, as mentioned before, occurred under poor sanitary conditions, often when and where dysentery is or has been rife.

Predisposing factors which may affect host resistance to this particular infection are probably important, particularly under military circumstances, although their existence rests on circumstantial evidence alone. They are: poor diet, alcohol, poor living conditions, exposure during active campaigns.

A high prevalence of hepatitis in syphilitic patients undergoing intravenous therapy has been noted on more than one occasion. It is not clear whether this is due to an increased vulnerability of the liver for invasion by the virus, or to the possible artificial transmission of serum jaundice.[56]

Incubation Period: In most epidemics this period has been estimated to be between 20 and 40 days, averaging 26–28 days. In experimental human cases, induced by feeding serum or feces, the average incubation period has been 25 days. It may occasionally be as short as 16 days or prolonged to 85 days.

Natural Transmission: For information on this point one would be concerned about the circumstances under which epidemics occur and it is well to recall that water-borne epidemics have been reported.[52, 57] Recently Neefe and Stokes [58] have reported the transmission of hepatitis without jaundice to human volunteers by the oral administration of water from a well of a children's camp where a large outbreak of infectious hepatitis had occurred. This may represent one manner in which infectious hepatitis normally spreads although it is probable that other ways also exist. There is good evidence to suspect the intestinal-oral circuit as one of the natural routes of spread. This theory is based in part on field observations and in part on the investigative work quoted below, which indicates that the virus is in the feces during the acute phase of the disease, and that infectious hepatitis can be transmitted to human volunteers by feeding infected feces. It fits in with facts observed in military populations, with its high prevalence in areas where camp sanitation is bad, and its frequent association with intestinal diseases. Kirk's [59] study of infectious hepatitis, among New Zealand soldiers at El Alamein in Egypt in 1942, led him to believe that the disease was spread by flies carrying the infection from human excreta. It has further been suspected that the prevalence of bacillary dysentery or Salmonella infections may either predispose in some unknown way to the acquisition of hepatitis or that these organisms are prone to act as secondary invaders.[60, 61]

The question of possible transmission by biting insects also deserves consideration, for a disease which is obviously infectious, and in which the virus is in the blood, should be regarded potentially as a disease which might be spread by blood sucking insects, until proved otherwise.

In this connection its artificial spread through the use of improperly sterilized syringes is a point of consideration described by Droller.[62] The extreme viability of the icterogenic agent, the infectiousness of small (0.01 ml.) quantities of serum, all point to the fact that it has probably been transmitted artificially more often than is realized. These impressions should all be reviewed critically in the light of newer experimental work on this disease.

Etiologic Agent: As yet this so-called icterogenic agent has not been actually "isolated" in the sense that it has been seen, cultured, or transmitted experimentally to laboratory animals. This agent or "virus" is present in the blood and feces of patients in the pre-icteric and early icteric phases of the disease; it may also be present in the urine at this time. It withstands heating to 56° C. for at least ½ hour.[70] It has also been filtered through bacteria tight filters and for this reason, has been classified as a virus.[67, 69, 70] Data on the limits of time (during the incubation and during the active disease) in which this "virus" may be found in the human peripheral blood are scanty, but there is good reason to believe that the pre-icteric and early icteric stage is the period in which the virus is most readily demonstrable in the blood and feces. The limits of the intestinal carrier state remain to be accurately determined.

Attempts to infect common laboratory animals,[6, 71] including many rodents, many species of monkeys, and even chimpanzees,[72] have failed. It is possible that the "jaundice" transmitted to pigs in Denmark by Andersen [73] was infectious jaundice of this type. More recently German workers claim not only to have propagated this agent in the developing chick embryo,[74, 75] but to have infected birds [76, 77] with it. These reports have not however, been confirmed.[78] To

TABLE 1

Experimental Infectious Hepatitis Produced in Human Volunteers by Various Investigators

	Author and Reference	Year	Inoculum	Route	Number * Tested	Jaundiced	Incubation Period
Oral	Voegt—63	1942	Duodenal Fluid	Oral	4	1†	28
	Voegt—63	1942	Urine	Oral	?	1	?
	Voegt—63	1942	Blood	Oral	?	1	?
	MacCallum and Bradley—64	1944	Feces	N. & P.	26	3	27–31
	Havents, et al.—65	1944	Feces (frozen) (extr. dried)	Oral	3	2	20–22
	Havens—70, 86	1945	Serum	Oral	5	4	23–34
	Havens—79	1945	Feces	Oral	3	2	16–17
	Findlay and Wilcox—67	1945	Feces	Oral	18	7†	17–28
	Findlay and Wilcox—67	1945	Urine	Oral	6	3†	?
	Neefe, et al.—58, 68, 69	1945	Feces	Oral	72	31	19–33
	Neefe and Stokes—58	1945	Serum	Oral	3	2	26–33
Parenteral	Voegt—63	1942	Serum	Sc.	?	1	19?
	Cameron—8	1943	Blood Serum	Im.	6	6	3 & 30+
	Oliphant—66	1944	Serum	Sc.	21	4	85–106
	MacCallum and Bradley—64	1944	Serum	Sc.	6	3	64–92
	Havens—70, 86	1945	Serum	Sc. & Ic.	17	9	20–31

* The occurrence of sub-clinical and sub-icteric hepatitis is recognized but in this table only patients who developed jaundice are included.

† Author did not mention specifically whether jaundice occurred.

N. = Intranasal. P. = Intrapharyngeal. Sc. = Subcutaneously.
Im. = Intramuscularly. Ic. = Intracutaneously.

date therefore, almost all of the properties of this virus have been determined by using man as the experimental animal. Such experiments on human volunteers have also yielded some information as to the routes with which man can be readily infected.

TRANSMISSION EXPERIMENTS WITH HUMAN VOLUNTEERS

In the search for the natural mode of transmission of infectious hepatitis various experiments have been reported of infection following feeding icterogenic material to human volunteers. In Table 1 are recorded all of the positive results with jaundice reported so far, of attempts to infect human volunteers with infectious hepatitis by both the oral and parenteral routes.

The early work of Voegt [63] probably showed that in patients with infectious hepatitis the duodenal contents taken on the 24th and 30th days of disease and possibly urine and hemolyzed erythrocytes, are infectious when fed to human volunteers.

More recently MacCallum and Bradley [64] have demonstrated that the stools of patients in the pre-icteric state or in the first days of jaundice of infectious hepatitis contain an icterogenic agent which can be transmitted to human volunteers by feeding, producing infectious hepatitis after an incubation period of 27–31 days.

These latter results have been confirmed and somewhat enhanced by experiments conducted by the Neurotropic Virus Disease Commission of the U. S. Army.

The strain of infectious hepatitis virus used in this laboratory was originally obtained from the stool of a patient (BE) who contracted epidemic infectious hepatitis in Sicily.[65] This agent has been through three passages in human volunteers and is regularly present in the feces and serum of patients in the pre-icteric or early icteric

phase. Eleven human volunteers have been fed either feces or serum containing this strain of icterogenic agent, and of these, 8 have contracted infectious hepatitis with incubation periods ranging from 16 to 34 days. The ease of experimental transmission by feeding and the presence of virus in the feces indicate that the intestinal-oral route may be of importance in the natural spread of the disease.

It is of interest that when inoculated parenterally (in serum) the work of others has shown that different strains of "virus" produced infectious hepatitis with varying incubation periods. In this laboratory 17 volunteers have been inoculated subcutaneously and intracutaneously, and of these, 9 contracted the disease after 20–31 days. These results are in agreement with some and in contrast with those of certain other workers, employing different strains; the latter frequently have found much longer incubation periods following parenteral inoculation of human volunteers with infectious serum (see Table 1).

Such divergent results in the reports of various groups of investigators suggest that different strains of virus may exist. This is supported in part by recent work in this laboratory with one strain in which an effort was made to determine if size of dose or route of inoculation had any effect on the length of incubation period of infectious hepatitis caused by our strain of virus. In one experiment equal amounts of the same icterogenic agent were fed and inoculated parenterally into human volunteers.[70] In another experiment the same icterogenic agent was inoculated in graded amounts of the order of 1-, 10-, and 50-fold increasing doses (0.01 ml. to 0.5 ml. of infectious serum).[79]

The results revealed no appreciable difference in the incubation period dependent on route of inoculation or size of dose, in the range of dosage used.

IMMUNITY IN INFECTIOUS HEPATITIS

The natural history of the disease supports the concept of a widespread immunity in the general population, incited by clinical or subclinical infection. Suggestive evidence along this line has been offered recently by Stokes and Neefe[80] and others[81, 82] in their demonstration of the protective effect of human gamma globulin against infectious hepatitis when administered during the incubation period. Preliminary experiments[83] with human volunteers indicate that an attack of infectious hepatitis provides immunity against reinfection with a similar strain of virus.

The question of whether the immunity resulting from a single attack is effective against multiple strains of the virus deserves much more study. It has already been pointed out, for instance, that the immunologic relationship between the naturally occurring disease, infectious hepatitis, and homologous serum jaundice is poorly defined. The etiologic agent, or agents, of the two conditions have certain properties in common: both are filtrable and withstand heating to 56° C. for at least 30 minutes. Both conditions may be transmitted by parenteral inoculation. Infectious hepatitis can be transmitted to man by the oral route and the etiologic agent is in the stools. In contrast to this the agent of homologous serum jaundice has not been demonstrated in the stool,[68, 84] and successful transmission experiments by the oral route are limited.[85]

But, as mentioned, the question of cross-immunity between these two conditions requires clarification. Men who have had serum jaundice do acquire infectious hepatitis. Experimentally, the evidence for cross-immunity is contradictory. Oliphant[66] has demonstrated

protection against a strain of infectious hepatitis in patients convalescent 9–18 months from homologous serum jaundice while the results in our laboratory [86] have failed to show such protection; for when patients convalescent 6 months from homologous serum jaundice were reinoculated with a strain of infectious hepatitis they contracted the latter disease.

SUMMARY

The epidemiological features of infectious hepatitis and the experiments on the transmission of this disease to human volunteers have been reviewed.

Evidence has been cited that the etiologic agent is filtrable and is in the stool, serum, and possibly urine of patients in the acute phase of the disease. It may probably be classified as a virus. Other properties including its resistance to heat and transmissibility to human volunteers by feeding or parenteral inoculation have been discussed.

The fact that this agent is in the stool and may be transmitted by feeding to human volunteers suggests that the intestinal-oral route may be important in the natural spread of the disease.

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The Nobel Prize Awards

Sir Alexander Fleming, of London, and Sir Howard W. Florey and Dr. Ernst B. Chain, of Oxford University, recently were awarded the 1945 Nobel Prize for physiology and medicine. The 1943 award was made to Drs. Edward A. Doisy, Professor of Biochemistry at the St. Louis University School of Medicine, and Henrik Dam of Copenhagen, who was in the United States at the time. The 1944 award was presented to Drs. Joseph Erlanger, Professor of Physiology at Washington University School of Medicine, St. Louis, and Herbert Spencer Gasser, Director of the Rockefeller Institute, New York. According to the Stockholm announcement, the 1945 award is made in recognition of the pioneer work of these three investigators in the discovery of penicillin and its healing effects in treating infections. The recipients will share equally in the prize, which amounts to about $30,000. Fleming's discovery of penicillin as an antibiotic agent was published in 1929; Florey and Chain demonstrated a method of obtaining penicillin in relatively pure form and first employed this substance clinically during the years 1938 to 1940. Fleming, Florey, and Chain are universally recognized as the pioneers in penicillin research, although other workers have contributed greatly to the preparation of penicillin and its clinical use today.

Proposed Report on the Educational Qualifications of Nutritionists in Health Agencies*†

I. General Scope of the Field

In view of the great advance in the science of nutrition and the realization on the part of public health workers that proper nutrition of individuals plays an important part in maintaining well-being, there is an increasing demand for properly trained workers to carry on nutrition programs in the field of public health.

The past few years have seen a marked increase in the employment of nutritionists by public health agencies, both official and voluntary. The same period has marked the beginning of research in nutritional status and food consumption as a function of public health agencies and also of nutrition service as an aspect of industrial hygiene.

Many official public health agencies are charged with responsibility for institutional care of fairly large numbers of people, notably in tuberculosis sanatoria and in hospitals and wards for the care of crippled children. In these institutions, the dietary department requires competent supervision both because diet is such an important aspect of treatment and also because food is likely to be one of the major items in the budget.

It is estimated that there are at least 400 public health nutritionists at work at the present time. Official public health agencies (state, county, and city) undoubtedly lead in the employment of nutritionists, with the American National Red Cross and its local chapters in second place. Among other health agencies maintaining nutrition service are: visiting nurse associations, community health councils, and tuberculosis associations. Although the war has given impetus to the public health nutrition movement, very few agencies would seem to have built up such large staffs as to point to marked retrenchment with the return to peacetime health programs.

Because of the developments listed above, public health agencies are seeking not only more nutritionists but nutritionists capable of performing specialized functions and of supervising the services of staff workers in positions of lesser responsibility. The original report on Educational Qualifications of Nutritionists in Health Agencies (approved by the Governing Council of the American Public Health Association, October 13, 1941) covered only the type of position most common at that time, namely that of a consultant who works under the administrative direc-

* The Committee on Professional Education of the American Public Health Association publishes this report before transmittal to the Governing Council in order to permit the members and Fellows of the Association to review it and to offer criticisms and suggestions in the further consideration of the report. Suggestions should be mailed promptly to the Committee on Professional Education, A.P.H.A., 1790 Broadway, New York 19, N. Y.

This report, like all other statements of the committee on professional and technical qualifications in public health, is subject to periodic revision in order that it may be kept abreast of the best thought.

† This proposed report is a revision of the Report on the Educational Qualifications of Nutritionists in Health Agencies approved by the Governing Council on October 13, 1941, and is intended to supersede the earlier report. It has been approved for publication in the respective Journals of the American Dietetic Association and the American Home Economics Association by their Executive Boards, with minor editorial changes.

tion of a major division of the health agency and who is largely responsible for the technical content of her program.

The report has been widely used by (1) colleges and universities training nutritionists and those arranging public health nutrition curricula; (2) administrators of civil service and merit systems; (3) employers selecting nutritionists, and (4) individuals preparing themselves for service in this field or arranging additional preparation for themselves or their staff.

Although the recommendations have proved helpful, their limitations have become increasingly evident. The subcommittee is agreed that the time has come to act on the implied promise in the footnote to the original report: "This report like all other statements of the Association on professional and technical qualifications in public health, is subject to periodic revision in order that it may be kept abreast of the best thought." The recommendations that follow cover the principal types of nutrition positions in the field of public health at the present time. It is impracticable to insist that all present incumbents comply with these requirements; they are recommended for application to candidates applying for appointment.

II. Statement of Functions

A. The nutritionist in a public health agency is a qualified professionally trained person who directs or carries on a program of activities dealing with the application of the scientific knowledge of nutrition to the promotion of positive health, the prevention of ill health, and the dietary control of disease. The nutrition program of a health agency is directed toward strengthening the service that the agency is rendering in determining the health status of the population served, in dealing with the causes of ill health, in caring for the sick entrusted to its care, and in promoting well-being among groups and individuals through better food practices.

The function of a highly organized nutrition service of a large health agency will include most, if not all, of the following activities. In smaller health agencies the range of functions will be narrower.

1. Organizing and carrying out a program to:

   a. Control dietary deficiency diseases through determining their prevalence and distribution and, if they are found to constitute a public health problem of some magnitude, by conducting or participating in clinics for their diagnosis and treatment.

   b. Prevent dietary deficiencies and promote health through encouraging wise production or selection and proper processing, preparation, and use of the foods necessary for optimum nutrition. Such programs frequently call for coöperation between the health agency and agencies and organizations in the fields of agriculture, education, welfare, industry, medicine, nursing, and dentistry.

2. Studies and surveys:

   a. On prevailing food practices of the population of a given area or of special groups, such as school, children, industrial workers.

   b. On cost, availability, and use of foods needed to furnish an adequate dietary, these to be used as guides for setting up nutrition programs.

   c. On the nutritional status with respect to certain factors of the population of a given area or special groups, such as residents of a home for the aged.

   d. On the effect on nutritional status of modifications in the diet.

   e. On the effectiveness of nutrition programs in improving food supplies and practices.

3. Preparation and assembling of materials for nutrition education and reviewing the nutrition content of all educational materials prepared or distributed by the agency.

4. Professional education. Participation in the field training of public

health students and in the orientation and in-service training of the staff of the health agency.

a. Imparting to public health workers and allied personnel a working knowledge of human food needs, nutritive values of foods, and methods of improving nutritional status in coöperation with whatever specialized personnel in nutrition may be available in the area served.

b. Participation in the pre-service and in-service training of nutritionists and of workers in related fields, such as educators, social workers, managers of food service in schools, child care centers, or institutions.

5. Consultation services for workers in health or allied agencies in regard to nutritional needs and dietary practices of individuals, families, institutional and industrial groups, or a cross-section of the population of a given area, with the object of planning ways of meeting these needs and improving practices within the resources—actual or potential—of the individuals or groups under consideration.

6. Individual and group instruction of adults and children on food, nutrition, and budgeting, in connection with health conferences or clinics or with the educational or service program of the health agency in schools or the agency's program of community education.

7. Compilation and, if necessary, preparation of nutritionally adequate food market orders, menu plans, and recipes, adjusted to various cost levels, to racial, religious, or regional food practices, and to individuals in unusual circumstances, such as night shift workers or persons living outside of family groups. Similar service for therapeutic and other special diets recommended by physicians.

8. Coöperation with welfare agencies in formulating budget standards for food to meet the nutritive needs of individuals, family groups, and institutions, and in calculating the cost of standard food budgets at prevailing prices.

9. Inter-agency relationships. Bringing about closer relationships between the health agency and other agencies carrying on educational, service, or research programs in nutrition.

10. Coördination of nutrition programs. Participation in the organization and continuing activity of coördinating councils in the field of nutrition and health and in the organization of communities for unified effort toward the improvement of nutritional status and the maintenance of a satisfactory level of nutrition once attained.

B. *Classification of different grades*

The nutrition positions in health agencies may be grouped into 3 grades: (1) The director of a nutrition service in a health agency with responsibility for a staff of workers; (2) the nutritionist who acts primarily as a consultant and neither has responsibility for a staff of workers nor receives close technical supervision; and (3) the staff nutritionist working under close technical supervision from the director of a nutrition service. These grades are described in somewhat more detail in connection with the statements of education and experience under III and IV.

III AND IV. BROAD EDUCATIONAL BACKGROUND (UNDERGRADUATE) AND GRADUATE EDUCATION

A. *For a director of a nutrition service in a health agency with responsibility for a staff of workers.* The essential qualifications for the incumbent of this position are broad grasp of the science of human nutrition, knowledge of public health administration, and administrative ability. The director cannot be expert in every aspect of public health nutrition but should be able to recruit and supervise a staff that together will possess competence in all the major

fields. Directors of nutrition services in health agencies may have acquired the necessary qualifications through any one of several backgrounds of education and experience but these backgrounds will have certain elements in common, as indicated in the following paragraphs:

1. Education. Human nutrition should be the subject of major interest. A director of nutrition service should have at least one year of full-time graduate academic credit in addition to the undergraduate academic training leading to a baccalaureate degree or its equivalent in pre-medical training. The combination should be so chosen as to qualify the student for participation as a nutritionist in the public health field.

Colleges and universities offer graduate training in public health nutrition in professional schools of public health or in postgraduate programs in nutrition based on undergraduate preparation in home economics. The content and extent of graduate study required to supply this training will vary according to the type of undergraduate preparation, the interval since such work was completed, the relevancy of any work experience, and the scope of the program directed.

a. The *undergraduate course of study* leading most immediately to preparation for public health nutrition is that qualifying the student for a baccalaureate degree with a major in foods and nutrition as offered in a course in home economics. Such a curriculum includes as a requirement basic courses in chemistry (including physiological or biochemistry), physiology, bacteriology, the social sciences (economics, sociology, and psychology), human nutrition, food study (selection, marketing, preparation), and educational methods. Electives often include introductory courses in statistics, child development, journalism, and public speaking.

b. Students whose undergraduate major has been in the biological sciences, social sciences, education, or pre-medical studies, will need to supplement such preparation with the required courses listed above.

c. The minimum of one year of *full-time graduate academic study* should feature advanced courses in human nutrition, and together with the undergraduate study should give a working knowledge of: methods and techniques of nutrition investigations and dietary studies, child hygiene and development, public health administration, health education, principles of supervision, community organization and resources, and social case work.

d. A course in hospital dietetics accredited by the American Dietetic Association is a desirable addition to other types of graduate preparation but is substitutable only in so far as it carries academic credit in courses essential for public health nutrition. Completion of the requirements for a degree as doctor of medicine or doctor of philosophy in biochemistry constitutes adequate educational preparation for the field of public health nutrition when the students have had full courses for academic credit in human nutrition and its applications in the field of public health.

e. Field work in a health agency carrying on a nutrition program under the supervision of a qualified nutritionist should be provided preferably at the graduate level.

2. Experience *

a. Minimum of 4 years of successful, paid experience as a nutritionist in a health agency or a welfare agency carrying on a nutrition and health program. At least one year must have involved responsibility as a supervisor of both professional and clerical staff or as a consultant, or

b. Two years in the above plus 4 years in any one of the following positions or any combination of them:

(1) Therapeutic or teaching hospital dietitian

(2) Physician engaged in clinical medicine, teaching of medical students, research, or public health

(3) Dietitian or nutritionist employed by a food clinic, child development center, school system, nutrition council or committee

(4) Research worker in human nutrition

(5) Teacher of foods and nutrition in a school, college, or university, or adult education program

* Candidate should have had part of training and experience indicated within 4 years of the time of application.

(6) Agent or food and nutrition specialist in the agricultural extension service or farm security program

3. Substitution of education for experience.

Each year of relevant graduate study beyond the minimum of 1 year may be substituted for 1 year of experience except that 2 years of the type of experience described under 2a is not substitutable.

4. Personal qualities:

a. Executive, organizing, and administrative ability

b. Physical fitness

c. Ability to gain confidence of administrators and staff and to win and retain coöperation of coworkers and public

d. Skill in analysis of situations and in presentation of material

B. *For a nutritionist who acts primarily in a consultant capacity and neither has responsibility for supervision of a staff of workers nor receives close technical supervision.* The services rendered may be along either of two lines: (1) general consultation to a given area, or (2) service limited to a special field such as consultation in group or institutional feeding, or conducting a program of discovering and controlling nutritional deficiency diseases.

1. Education *

a. As outlined in A 1 of this section, undergraduate college work and satisfactory completion of the equivalent of at least 1 year of full-time graduate academic credit, chosen in relation to the previously mentioned basic training so as to qualify the student for participation in the public health field. For service in a special field, the graduate work should provide special training. For example, the consultant in group feeding should have majored in institution administration and completed apprentice training approved by the American Dietetic Association in hospital dietetics, institutional management, or industrial feeding, whereas a nutritionist in charge of a program of diagnosis and control of deficiency disease should have had complete medical training.

b. Field work in a health agency carrying on a nutrition program under the supervision of a qualified nutritionist should be provided preferably at the graduate level.

2. Experience *

a. Minimum of 2 years of successful, paid experience as a nutritionist in a health agency or a welfare agency carrying on a nutrition and health program, *or*

b. One year in the above plus 2 years in any one of the positions listed under A2b or any combination of them.

3. Substitution of education for experience:

Each year of relevant graduate study beyond the minimum of 1 year may be substituted for 1 year of experience up to a maximum of 1 year for a general consultant or 2 years for a nutritionist assigned to a research project, or a program requiring medical training.

4. Personal qualities:

a. Physical fitness

b. Executive and organizing ability

c. Ability to gain and retain confidence and coöperation of fellow workers and public

d. Skill in analysis of situations and in presentation of material

C. *For a staff nutritionist working under close technical supervision of a director of nutrition service.*

1. Education *

a. Successful completion of courses qualifying for a degree as outlined in A1 (a and b).

b. Field work in a health agency carrying on a nutrition program under the supervision of a qualified nutritionist.

2. Experience *

One year of successful paid experience in the fields listed under B 2 (a or b).

3. Substitutions for experience:

a. One year of relevant graduate study may be substituted for 1 year of experience. Or if the agency is in a position to provide

* Candidate should have had part of training and experience within 4 years of application.

systematic orientation and in-service training plus immediate technical supervision from a nutrition director, previous experience need not be required.

4. Personal qualities:

a. Physical fitness

b. Potentialities for developing—

(1) Executive and organizing ability

(2) Skill in analysis of situations and presentation of material

(3) Ability to gain confidence and cooperation of fellow workers and public

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Occurrence of Shigella Types in the Military Population of the Southeastern United States—1943 and 1944

MAJOR CARL T. NELSON, M.C., AUS; SECOND LT. ALFRED F. BORG, SN.C., AUS; FIRST LT. JOHN SPIZIZEN, SN.C., AUS; AND MARGUERITE J. BARNES

Fourth Service Command Medical Laboratory, Fort McPherson, Ga.

IN 1943 and 1944 bacillary dysentery was an important cause of non-effectiveness among troops stationed in the Southeastern United States. Numerous cases occurred in men on field maneuvers but the disease was also relatively common among soldiers and their dependents living under conditions of modern sanitation on or near permanent army installations.* In addition to the several extensive epidemics of bacillary dysentery observed in this population during the two year period, a large number of sporadic or endemic cases were found scattered throughout the region. This communication deals with the incidence and distribution of *Shigella* types in these non-epidemic cases.

Heretofore, information regarding the occurrence of *Shigella* types in the United States has been scanty. The most comprehensive investigations of this nature yet published are those of McGinnes, *et al.*,[1] Hardy, *et al.*,[2] Mayfield and Gober,[3] and Wheeler.[4] These authors seem agreed that the so-called Flexner organisms have been the predominant endemic types in this country.

The material presented here represents an analysis of the *Shigella* organisms isolated from 2,119 fecal samples and cultures which were submitted to a large central laboratory for final identification. Only specimens recovered from sporadic cases of acute diarrhea during the years 1943 and 1944 have been included in this study. Cultures obtained from bacteriological surveys of epidemics were excluded in an effort to secure a more accurate index of the relative incidence of *Shigella* types by preventing undue weighting of the data. Since specimens were forwarded to the central laboratory for confirmation regardless of the ease or difficulty in distinguishing the various microörganisms, it is felt that the comparative incidence of *Shigella* types found in this study is probably representative of their relative frequency of occurrence.

METHODS

Fecal specimens submitted to the central laboratory were shipped in

* A large proportion of this population was not native to the Southeast but had been assembled from virtually all regions of the United States. In only a relatively few instances, however, had its members ever lived or traveled outside the continental limits of this country.

TABLE 1

Incidence of Shigella Types Isolated from 2,119 Sporadic Cases of Bacillary Dysentery in the Military Population of the Southeastern United States, 1943–1944

Shigella Type (After Weil et al.[7])	*Corresponds with*		*Number of Cultures Identified*	*Per cent*
	Andrewes & Inman	*Boyd*		
I	V	Flexner I	22	
II	W and WX	Flexner II	191	
III	Z	Flexner III	23	
IV		Flexner IV (103)	11	
V		Flexner V (P119)	1	33.3
VI		Flexner VI (88-Newcastle, Manchester)	372	
VII	X *		71	
VIII	Y *		15	
X		Boyd II (P288)	2	0.1
XIV		Boyd P274	1	
ambigua		Schmitz	25	1.2
sonnei			1,313	62.0
alkalescens			69	3.3
all other †			3	0.1

* No longer considered to be valid types. These microörganisms were isolated during the early months of 1943 before a complete set of monovalent absorbed antisera was available in this laboratory.
† Includes: atypical forms—2; Sachs type Q771—1.

glycerine-saline preservative. These were cultured on plates of SS (Shigella-Salmonella) agar and EMB (eosin-methylene blue) agar by direct inoculation and also after preliminary cultivation in Selenite-F enrichment medium. Suspicious colonies were then picked to Kligler's iron agar slants. Those yielding suggestive or positive Kligler's reactions were studied further by a full series of the customary cultural and biochemical tests. Finally, each culture tentatively classified as a dysentery bacillus was typed serologically by its agglutination reactions in monovalent *Shigella* rabbit antisera. In the early stages of this study the cultures were typed by the tube agglutination method described by Hardy, *et al.*[5] Later, when a constant supply of carefully absorbed monovalent rabbit antisera became available,* serological typing was carried out by the slide agglutination technique recommended by Wheeler.[6] When previously isolated cultures were sent to the central laboratory, they were first re-streaked on EMB and nutrient agar. Suspicious colonies were picked to Kligler's iron agar and then identified by the same procedures used in the study of fecal specimens.

* The absorbed rabbit antisera employed for diagnostic purposes were supplied through the courtesy of Captain Charles V. Seastone, MC, Division of Bacteriology, Army Medical Center, Washington 12, D. C.

RESULTS

The relative incidence of the various *Shigella* types found in these cases is shown in Table 1. *Sh. sonnei* was by far the most prevalent organism and was isolated from 1,313, or approximately 62 per cent, of the patients. On the other hand, the so-called Flexner strains of dysentery bacilli (including those assigned to the doubtful types X and Y) were recovered in 706, or only one-third, of the cases. *Sh. dysenteriae* (Shiga) was not encountered and neither the Boyd group (types IX to XIV) nor the Sachs types were found with any frequency. It is interesting that *Sh. alkalescens* was recovered in an appreciable number of cases. Although the pathogenicity of this microörganism

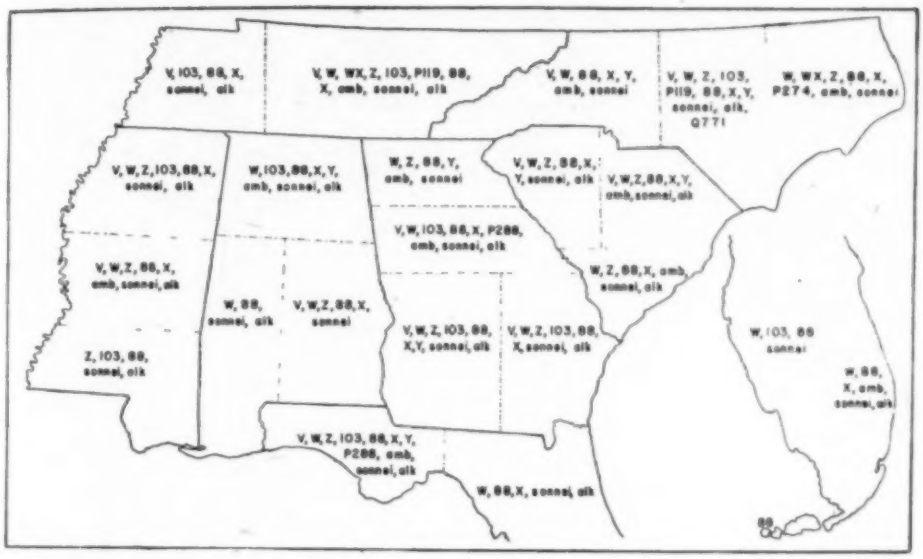
V, 103, 88, X, sonnei, alk
V, W, WX, Z, 103, P119, 88, X, amb, sonnei, alk
V, W, 88, X, Y, amb, sonnei
V, W, Z, 103, P119, 88, X, Y, sonnei, alk, Q771
W, WX, Z, 88, X, P274, amb, sonnei
V, W, Z, 103, 88, X, sonnei, alk
W, 103, 88, X, Y, amb, sonnei, alk
W, Z, 88, Y, amb, sonnei
V, W, Z, 88, X, Y, sonnei, alk
V, W, Z, 88, X, Y, amb, sonnei, alk
V, W, 103, 88, X, P288, amb, sonnei, alk
V, W, Z, 88, X, amb, sonnei, alk
W, Z, 88, X, amb, sonnei, alk
W, 88, sonnei, alk
V, W, Z, 88, X, sonnei
V, W, Z, 103, 88, X, Y, sonnei, alk
V, W, Z, 103, 88, X, sonnei, alk
W, 103, 88 sonnei
Z, 103, 88, sonnei, alk
W, 88, X, amb, sonnei, alk
V, W, Z, 103, 88, X, Y, P288, amb, sonnei, alk
W, 88, X, sonnei, alk
88

FIGURE 1

Geographic Distribution of Shigella Types Isolated from Non-Epidemic Cases of Bacillary Dysentery in the Military Population of the Southeastern United States, 1943–1944

V = Flexner I
W and WX = Flexner II
Z = Flexner III
103 = Flexner IV (Boyd 103)
P119 = Flexner V (Boyd P119)
88 = Flexner VI (Boyd 88—Newcastle, Manchester)
X = X of Andrewes and Inman (Probably not a valid type)
Y = Y of Andrewes and Inman (Probably not a valid type)
P288 = Boyd II (Boyd P288)
P274 = Boyd P274
amb = *Sh. ambigua* (Schmitz)
sonnei = *Sh. sonnei*
alk = *Sh. alkalescens*
Q771 = Sachs type Q771

for man has often been doubted, the evidence available here indicates that *Sh. alkalescens* is not infrequently isolated from rather severe cases of dysentery.

The geographic distribution of the *Shigella* types recovered from endemic cases of bacillary dysentery in this series is shown in Figure 1. For convenience, the area comprising the Southeastern United States has been divided into 22 districts. The identity of the *Shigella* organisms isolated from the cases in each district is shown in the figure. Generally speaking, these data indicate that the *Shigella* types most frequently found in sporadic cases of dysentery were the ones which also enjoyed the widest geographic dispersion.

COMMENT

The relative incidence of Flexner and Sonne bacilli found in this study differs considerably from that formerly observed in the United States.[1–4] The previous reports indicate that the Flexner organisms have been the predominant dysentery bacilli in this country, whereas in these cases *Sh. sonnei* was isolated almost twice as often as all other types combined. It is difficult to say whether or not such findings denote an actual shift in the prevalence of *Shigella* types. As suggested by Weil,[8] changes in the reported

incidence of various members of the *Shigella* group may be partly the result of improved methods of bacteriological diagnosis. This is particularly true in the case of late lactose fermenters such as Sonne bacilli. Nevertheless, the data presented here attest to the widespread occurrence of *Sh. sonnei* and to its importance as a cause of bacillary dysentery in the Southeastern United States.

The geographic distribution of the various *Shigella* types within this region is of some interest. As shown in Figure 1, *Sh. sonnei*, Flexner VI (Boyd 88-Newcastle-Manchester group), and Flexner II (W and WX) tend to be ubiquitous. The other Flexner bacilli, with the exception of type V (Boyd P119), are also well disseminated—as are *Sh. ambigua* (Schmitz) and *Sh. alkalescens*. The remaining members of the group were only rarely encountered and do not seem to be widely distributed in this area at the present time. The diversity of *Shigella* types found in some parts of the Southeastern states is also impressive. East Central Tennessee, the Florida Gulf Coast, and Central North Carolina seem to have been most fertile in this respect during 1943 and 1944.

SUMMARY

An analysis of the *Shigella* types isolated from 2,119 sporadic or non-epidemic cases of bacillary dysentery in the military population of the Southeastern United States during 1943–1944 has been presented. The results show that *Sh. sonnei* was the organism most commonly recovered from these patients. The geographic distribution of the various *Shigella* types within this region was widespread. As might be expected, the varieties of dysentery bacilli most frequently isolated from the endemic cases were also the ones which exhibited the greatest geographic dissemination.

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A.P.H.A. MEMBERSHIP APPLICATION BLANK

Beginning with this issue of the *American Journal of Public Health*, an A.P.H.A. membership application blank will be carried every month in the advertising section. This time it is on page XXXIII.

Incidence of Certain Biological Characteristics among "Food Poisoning" Staphylococci

HARRY A. FELDMAN, MAJOR, MC, AUS *

THE final identification of a given staphylococcal strain as the causative agent of a food poisoning outbreak is usually dependent upon its ability to produce enterotoxin as measured by one of the cat tests.[1, 2] As a result of this requirement the large control laboratory is frequently faced with the dilemma of deciding upon how many of the staphylococcal colonies isolated from the materials submitted from a given outbreak are to be subjected to cat testing. This problem would be simplified if a reasonably accurate screening procedure were available.

Athough Stritar and Jordan[3] have demonstrated that no one staphylococcus is responsible for food poisoning, it was considered that the results obtained by the use of a slightly different combination of tests in a series of 109 staphylococcal strains isolated from food poisoning material might be of interest. Twenty-two of the organisms were submitted as cultures; the remainder were isolated directly from food specimens which had been forwarded to this laboratory for study.

Methods—Following initial isolation (or purification) on tryptose agar, several staphylococcal colonies were selected from each plate for complete study. Pigmentary groupings were determined after cultivation on plain and blood (citrated horse or sheep) tryptose agar for a maximum period of 48 hours. Hemolytic properties were determined after incubation for 24 hours on the same blood agar medium. Coagulase activity was tested in a 1:4 dilution of human plasma as described by Chapman, *et al.*[4] Mannite fermentation was studied in peptone water containing 0.5 per cent mannite[5]; the maximum period of observation was 48 hours. The method of Dolman and coworkers as cited by Koser[6] was employed for the preparation of material for the enterotoxin test. When cats were available the intravenous method of Davison, Dack, and Cary[1] was employed, whereas when it was necessary to use young kittens the intraperitoneal method of Dolman, Wilson, and Cockcroft[2] was selected. The majority of the tests were performed by the intravenous cat method.

No enteric pathogens were isolated from any of the source materials used for this report.

Data and Discussion—The incidences of the various characteristics are summarized in Table 1. It will be noted that while 27 of 93 (29 per cent) strains tested yielded positive enterotoxin tests, 23 of these occurred among golden strains. Although only 9 of the organisms fermented mannite, 21 were hemolytic and 21 produced coagulase.

Table 2 concerns itself with a break-

* With the technical assistance of Miss Jane Barnes.

TABLE 1

Characteristics of 109 Staphylococcal Strains from Food-Poisoning Outbreaks

		Hemolysin		Mannite		Coagulase		Enterotoxin	
Pigment	Total	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
Golden	31	17	13	3	24	20	12	23	5
White	71	4	63	5	54	1	69	4	54
Yellow	7	0	7	1	6	0	7	0	7
Totals	109	21	83	9	84	21	88	27	66

TABLE 2

Characteristics of the Enterotoxin Positive Staphylococcal Strains

	Enterotoxin	Hemolysin		Mannite		Coagulase	
Pigment	Pos.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
Golden	23	14	9	3	19	18	5
White	4	0	4	0	3	0	4
Yellow	0	0	0	0	0	0	0
Totals	27	14	13	3	22	18	9

down of the enterotoxin positive strains. Seventy-eight per cent of the aureus strains were coagulase-positive and 61 per cent were hemolytic, but only 14 per cent fermented mannite. This is in contradistinction to the 4 albus enterotoxin producers in which none of these characteristics were demonstrable. While the two studies are not wholly comparable, these figures confirm Stritar and Jordan's [3] earlier findings, that if enterotoxin production is used as the criterion of food poisoning capability none of the other biological characteristics occurs with sufficient regularity to be pathognomonic of such ability. However, our data do suggest the generalization that golden, coagulase-positive, hemolytic staphylococci isolated from suspected food poisoning sources are likely to be enterotoxin producers; consequently, determination of these characteristics may be employed as a screening procedure in situations where animal testing must be conducted on a limited scale. Such screening can be undertaken only with the realization that a number of cat-positive specimens will be missed. In such situations it might be practical to seed all staphylococci isolated from a single food (or all specimens) in one flask of the enterotoxin medium and then to use the common filtrate in a small group of animals.

TABLE 3

Sources of Twenty-seven Enterotoxin Positive Staphylococcal Strains

Source	Golden	White
Pudding	2	1
Cake	1	0
Rice	1	0
Vomitus	7	0
Meat	1	0
Culture *	4	1
Meat Sandwich	0	2
Cocoa	1	0
Peas	1	0
Fish	2	0
Wieners	1	0
Unknown	2	0
Totals	23	4

* Submitted in this form; food source unknown.

Table 3 indicates the various sources from which the enterotoxin strains were isolated. The group of vomitus specimens yielded rather surprising results. They all came from a single outbreak and had the same characteristics: hemolytic, coagulase-positive and mannite-negative. The organisms were isolated in almost pure culture so that this material suggests itself as a

potentially good source of the etiological agent of an outbreak. Two of the specimens also contained citreus colonies, but these were negative in all other respects.

SUMMARY AND CONCLUSIONS

1. Of 109 strains of staphylococci isolated from foods and human vomitus during bacteriologic studies of food poisoning outbreaks, 27 strains produced enterotoxin as measured by one of the cat tests. Twenty-three of the 27 were classified as *Staph. aureus* and 4 as *Staph. albus*. Of the *Staph. aureus* strains 78 per cent were coagulase-positive and 61 per cent hemolytic, while 14 per cent fermented mannite. The *Staph. albus* group had none of there characteristics.

2. Those staphylococcal strains which produced coagulase, hemolysin, and golden pigment were more likely to produce enterotoxin, but this combination of characteristics did not occur with sufficient regularity to replace the cat test.

3. Seven enterotoxin positive strains were isolated from human vomitus while the remaining 20 came from a multiplicity of foods.

4. Under the conditions of this study mannite fermentation appears to be a poor, unreliable indicator of potential enterotoxin production by staphylococci.

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Hawaii Adopts Bread and Flour Enrichment Program

The Legislature of the Territory of Hawaii, according to Dr. C. L. Wilbar, Jr., the President of the Board of Health, at its last session, passed an act requiring the enrichment of bread and flour, which became effective May 8, 1945.

This act makes it unlawful for any person to manufacture, mix, compound, sell or offer for sale flour, white bread, or rolls for human consumption in the Territory unless they contain standard amounts of thiamine, riboflavin, niacin or niacin-amide and iron. The standards embodied in this legislation are in accord with those recommended by the Food and Nutrition Board of the National Research Council and the Federal Security Agency, with the exception that the Council's optional standard for vitamin D was not adopted. However, a minimum of 500 milligrams and a maximum of 1,500 milligrams of calcium per pound have been adopted for enriched self-rising flour.

A New Statement of School Health Policies

CHARLES C. WILSON, M.D., F.A.P.H.A.

Chairman, National Committee on School Health Policies; and Professor of Health and Physical Education, Teachers College, Columbia University, New York, N. Y.

A HEALTHIER America waits upon and depends upon the universal adoption of sound school health policies. The National Committee on School Health Policies, formed in 1945 by the National Conference for Cooperation in Health Education, faced squarely the problem of stating definitely and clearly policies under which school health programs might be maintained and improved in thousands of different school situations. The broad scope of its conclusions and suggestions can be gleaned from the range of the committee's recommendations. It is recommended that all schools:

"Organize a school health council;

"Make provision for healthier school living by raising their standards of inspection for safety and sanitation, by employing more understanding and emotionally stable teachers, by paying more attention to the health of school personnel, and even by serving better food;

"Improve the quality of health and safety instruction by according more time, securing better-qualified teachers, granting more scholastic credit and providing more adequate teaching materials;

"Clarify and sharpen their programs for the prevention and control of communicable diseases and avoidable accidents;

"Institute wider programs of health counseling, including keener teacher observation, more frequent screening tests, and more useful medical and psychological examinations;

"Enforce more intelligent precautions in physical education and athletic programs;

"Identify sooner and provide more sensibly for handicapped children;

"Provide in-service education to help teachers to understand the health problems of children;

"Participate in programs of parent and community health education; and

"Seek qualified medical advisors, nurses, health educators, and other necessary specialized health personnel."

While these recommendations represent current thinking, the idea of a statement of school health policies is not new. More than five years ago the Maternal and Child Health Section of the American Public Health Association appointed a committee * to prepare a statement of school health policies. Following the preparation of a preliminary report, that committee suggested that its report be submitted to a number of other groups concerned with school health programs. This suggestion was approved and acted upon. These other groups suggested changes and improvements which were incorporated into the preliminary material, and the final report was published in 1940 under the name of eight different national organizations. It was widely used as a guide and for discussion purposes.

Now a 1945 revision of *Suggested*

* Members of that committee were Harold H. Mitchell, M.D., Mary E. Chayer, R.N., and Charles C. Wilson, M.D.

School Health Policies is available * for guidance of all concerned with school health programs. Although based on the original report, the present edition has been so completely rewritten and rearranged that it is practically a new statement.

Like its predecessor, the 1945 edition of *Suggested School Health Policies* was produced by the coöperative efforts of representatives of many professional groups; it is an integration of the viewpoints of educators, physicians, nurses, and public health specialists. The following is a list of those who worked diligently in preparing the 1945 edition, together with the names of the organizations which nominated them:

W. E. Ayling, M.D., American School Health Association
W. W. Bauer, M.D., American Medical Association
Edward S. Evenden, Ph.D., American Association of Teachers Colleges
Raymond A. Green, M.A., Secondary School Principals Association
W. H. Lemmel, Ed.D., American Association of School Administrators
S. S. Lifson, M.A., U. S. Public Health Service
Ben Miller, Ph.D., American Association for Health, Physical Education and Recreation
Harold H. Mitchell, M.D., American Academy of Pediatrics
Dorothy Nyswander, Ph.D., American Public Health Association
Thurman B. Rice, M.D., Joint Committee on Health Problems in Education of the N.E.A. and A.M.A.
Justus J. Schifferers, Health Education Council, New York (*Secretary*)
Maycie Southall, Ph.D., Educational Policies Commission
Frank Stafford, M.A., U. S. Office of Education
George M. Wheatley, M.D., U. S. Children's Bureau
Alberta B. Wilson, R.N., National Organization for Public Health Nursing
Charles C. Wilson, M.D. (*Chairman*)
J. M. Wisan, D.D.S., American Dental Association

Upon the Secretary of the committee, Justus J. Schifferes, fell the responsibility for arranging and editing the report. It was my privilege to act as Chairman of the committee.

Suggested School Health Policies recognizes fully that the efforts of health departments and education departments, as well as all other community groups, must be closely coordinated in order that the benefits of modern knowledge of health and of disease prevention may be extended to all children. It suggests that a health committee or health council be organized in each school and each school system and that such groups participate in community health councils. It suggests that all community resources be made available to meet the health needs of students, and that community planning should, if necessary, lead to the development of additional resources.

The suggested policies regarding health and safety instruction recognize the important changes in this part of the school curriculum, particularly at the secondary school level where specific health courses are recommended. Health courses should be taught by teachers with special preparation and certification in health education. A variety of teaching methods should be used.

The section of the report dealing with Services for Health Protection and Improvement suggests policies relating to the care of emergencies, the prevention and control of communicable disease, and health counseling. Health counseling is described as " the planned coöperative effort on the part of teachers, nurses, physicians, psychologists, dentists, and others to discover the health needs and health problems of students and to help them and their families find ways of meeting the needs and solving the problems." Specific suggestions are offered regarding the determination of health needs and problems; the interpretation of these needs to students, parents, and teachers; and

* Reprints of the complete report can be obtained from the American Public Health Association (25¢).

to meeting the needs through community resources.

That education is for *all* children is one viewpoint expressed in the policies report. Recommendations are made for the care and education of both physically and mentally handicapped pupils.

As significant as any policy it proposes is the demonstration by the National Committee on School Health Policies that there are no insurmountable barriers to the coöperative efforts of different professional groups. The committee agreed unanimously on the policies suggested. A spirit of friendly coöperation and of mutual interest prevailed at all times. This type of interprofessional coöperation may well be fostered by state and local groups interested in protecting and improving the health of children.

Members of the National Committee on School Health Policies hope that its report will be used for discussion by numerous groups interested in the health of school children, and that each of the national organizations represented on the committee will in time officially approve the report.

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THE LIFE BLOOD

IN an earlier issue of the *Journal*,[1] we have discussed the possibilities of the use of gamma globulin in the control of measles. Gamma globulin is, however, but one of many important elements in the marvellously adjusted fluid which flows out through the arteries to all the tissues of the body. The ancients were not far wrong in visualizing the heart as a symbol of the force which drives the human organism and the blood as the very essence of human life.

For this number of the *Journal*, we have asked Dr. C. A. Janeway to prepare a comprehensive review of the broad outlines of the subject of the "Blood and Blood Derivatives"—a topic which has been brought for the first time into the field of concrete, large-scale, application by the experiences of the war. Dr. Janeway surveys the wide possibilities of the use of whole blood, of resuspended red cells, of plasma, of fibrinogen and thrombin products, of gamma globulin, of isohemagglutinins, of serum albumin, and other fractions of plasma in the prevention and the treatment of disease. He points out the hazards to be avoided from transmission of syphilis and malaria, and serum jaundice, from the presence of antigens and antianaphylactic bodies and from the Rh factor.

Above all, he emphasizes the fact that the processes of procurement, processing, and distribution of blood and blood derivatives involve administrative problems of major magnitude. He cites the progress made in Michigan and North Dakota and the plans of Massachusetts. Whatever rôle may be played in different localities by the American Red Cross, the local hospital and the state or local health department, the problem is clearly one which, as the lawyers say, "is vested with the public interest." The health officer represents that public interest, and this review should be of the greatest value to him in dealing with what Dr. Janeway rightly describes as "A New Public Health Field."

REFERENCE

1. Editorial. Gamma Globulin for Measles. *A.J.P.H.*, 35, 7:732 (July), 1945.

A LAWYER SPEAKS TO DOCTORS

ON November 19, 1945, President Truman delivered to Congress a message on a national health program which marks an important milestone on the long road toward public health. It includes the five basic elements which have entered into all informed discussions of this subject: provision of hospitals and related facilities for areas now lacking service of this kind; expansion of public health services, particularly those related to maternity and infancy; advancement of medical education and research; a comprehensive plan of prepayment for medical care; and extension of social security to cover the hazards of sickness and disability. It is a bold and statesmanlike document—a clarion call to action.

The exact form of legislation to carry out these purposes will come before the Congress and the people during succeeding months. Discussions of details must await their concrete formulations. As a preparation for reasonable discussion, we urge preliminary study of an article presented in *Public Health Reports* for January 5, 1945. If your volume has not been bound as yet, dig this number out of your files. Take it with you on a train or in a bus and read an address by Wendell Berge, Assistant Attorney General of the United States on "Justice and the Future of Medicine," delivered before the American Urological Association. It is one of the clearest and fairest analyses of the basic principles which should govern our planning for medical care which have yet appeared in print.

Mr. Berge makes three points of major importance. The first of these is his emphasis on the fact that medical service as an actuality involves social and economic as well as medical factors. He recognizes that this problem is "unusually baffling. For it is only the exceptional person who has experienced all the arts—technical, economic, cultural—which converge in it. A beginning of understanding lies in a recognition of a distinction between the technology of medicine and its organization. By technology I mean all of those arts of diagnosis, therapeutics, surgery, radiology, dentistry, and the like, which constitute the profession of medicine. By organization I mean all of the arrangements, social and economic, by which medical service is made available. It is idle to dispute as to which is the more important; for there must be a medicine to practice, and there must be arrangements for bringing physician and patient together. It is no veiled mystery as to which is the more backward. In the advance of the art of medicine, you have done a brilliant job. In the face of this advance it is all the more tragic that progress in the organization of medicine has lagged and, because of this lag, the nation has not had the full benefit of your superlative performance."

With regard to the problems of organization of medical service—as distinct from the practice of the medical arts—Mr. Berge points out that "as a group, physicians have been little exposed to the discipline of the social sciences, and social organization is as intricate and as full of mysteries as the art of medicine itself. So when I hear a physician speaking about the organization of medicine in a tone of doctrinaire finality, I cannot fail to remark the contrast with the courageous and humble search for truth displayed in his own work. And when I hear the question put as a choice between private practice and socialized medicine, I cannot escape noting a confusion and dogmatism strikingly different from the scientific approach. As for the 'either or' of private practice and

socialized medicine, there is no such question. There are a myriad of schemes under which the doctor and the patient may be brought together—not a choice between just two." There is "no such question as private practice versus socialized medicine. For practice is never private and all medicine has a social function."

Mr. Berge deals effectively with the claim that no other system than individual financially-competitive medical service can safeguard quality of medical care, an essentially intimate personal relation between physician and patient and the morale and initiative of the physician. "Such values," he says, "depend upon no one single way of organizing medicine. To say that a doctor will give his utmost if he acts as his own business agent, and that his incentive will be stifled if he receives a salary, is not borne out by experience. The time was when the great scientific advance was the work of the solo inventor. Today the most creative of all work, the progress of science and the useful arts, is the product of men on salary. In the larger offices the great mass of lawyers now work on salary and work as hard and as heroically as the youngster who used to flaunt his own shingle in the breeze. It is true that the chance to become a partner is an incentive, but I would not rank it overly high, for work equally as good is done by the lawyers in the Government, where no such opportunity exists. In our institutions of higher learning, research as well as teaching falls to salaried employees and there you will observe an interest, excitement, devotion to duty, an urge to be up and doing. To return to medicine, how many thousands of our best doctors are today giving their all without stint in the service of the Army and the Navy?

"Ambition, security, income are necessary things. They have in every age and among the most varied conditions of society driven men to accomplishment. If I were a youngster, I would rather leave the series of judgments which shape my career to men of my own profession than attempt to get ahead by translating my skills into the art of winning and holding patients."

Mr. Berge's third emphasis is on the inevitability of changes in the present system of medical services and on the importance of medical participation in planning such changes. "The arts of medicine," he tells us "have advanced; the importance of medicine has been enhanced; it has become a necessity to the people and an essential in the operation of the industrial system. It has outgrown the organization into which, in days of petty trade, it was cast. The demand is for a vaster, more comprehensive, more reliable medical service. If an instrument of the common health can be provided on terms the people can afford, the people will rejoice. If you do not help them to do it, the people will seize upon whatever agencies are at hand as a help in time of need, for the universal demand that the common health be served cannot much longer be stayed.

"A new medical order is inevitable. Whether we shall cling to the old order or create a new one is not the question. The swift course of events has decreed that there can be no turning back. The question is rather what sort of a medical order it is going to be and whether it is the best which wisdom and knowledge can contrive. Like every promising venture, it has its hazards. Is it to be shaped by the best understanding which law, medicine, and the social studies can bring to it? Or is it to be constructed by amateurs in ignorance but with good intentions?"

He makes the following final plea to the medical profession: "I can hand you no ready-made medical order on a silver platter. If I could, it would do you

no good. I can only suggest to you, whose minds have long been busied with the subject, some reflections of a man of another profession. And I am positive that a service adequate to the times cannot be brought into being without the doctors' creative participation. As doctors and patients we face a crisis, and my appeal is to the ancient wisdom of the profession. The ends of medicine remain unchanged; ways and means must be found to adapt its practice to the conditions of present-day society. A new organization must be created that an ancient mission be not lost, that once again medicine shall be available to all in need and charges shall be graduated in accordance with ability to pay.

"An instrument of the common health such as never before has been offered to a people is within our reach. This is no time for petty doubts and timid moves. In the face of a national challenge we must, as one of our great jurists said of the law, let our minds be bold."

SAFE AT HOME?

HOME accidents represent the ninth most important cause of deaths in the United States. During the past five years more than 150,000 persons have died as a result of such accidents. The number of these deaths annually in this period has varied from a low of 30,000 in 1941 to a high of 33,500 in 1943.

The present indications are that there will be no marked change in the number of home accident fatalities this year. The National Safety Council estimates that there were 23,300 such deaths during the first nine months of 1945 as compared with 23,000 for the same period for 1944, an increase of approximately 1 per cent.

Although reliable home accident morbidity figures are not available because of the absence of any required reporting procedure, it is reasonable to suppose that the frequency of non-fatal disabling injuries, estimated at 4,800,000 in 1944, follows the same general pattern indicated by mortality figures.

Viewed in relation to its effect on the nation's mortality and morbidity experience, the prevention of home accidents can therefore be considered as one of our major public health problems as pointed out by W. Graham Cole at the December meeting of the Public Health Association of New York City.* It is a problem which requires careful fundamental study and the development of effective control procedures. Most home accidents are preventable, but procedures for their control must contemplate not only the correction of environmental conditions but a change in individual attitudes and the development of safe habits and behavior characteristics.

The responsibility for leadership in developing and applying control procedures for the prevention of home accidents rests largely in the public health field and upon the official public health agency. It is important, therefore, that the American Public Health Association through its Committee on Administrative Practice has set up a Subcommittee on Accident Prevention. As a preliminary step this subcommittee undertook a study of home safety activities conducted on the state level. Based on this study, a summary of the state-wide safety activities being conducted in New York, Minnesota, New Jersey, Illinois, and Kansas, was prepared and printed in the January, 1944, issue of "The Spotlight." Subse-

* To be published

quently the subcommittee developed a general program statement entitled "Accident Prevention—An Essential Public Health Service" and an outline, "Suggested Home Safety Activities—For Consideration of Local Health Departments." This material was printed in the March, 1945, issue of the *American Journal of Public Health*. Reprints of it, together with copies of a leaflet entitled "Get the Facts about Accidents," prepared by the National Safety Council, have been distributed to state, county, and city health departments.

The subcommittee in its program statement calls attention to the seriousness of the entire accident problem, pointing out that all types of accidents taken together represent the fifth cause of death in the United States. The subcommittee recognizes the vital part that organized accident prevention activities has played in the prevention of industrial, traffic, and other public accidents. It notes, however, that insufficient organized attention has been given to the prevention of home accidents, and states its belief that this latter field represents one of the major untilled fields of public health.

Of considerable significance is the fact that the program recommended by the Committee on Accident Prevention was published within a few months of the publication of the preliminary reports developed by the A.P.H.A. Committee on Hygiene of Housing. There is a definite correlation of interest between these two projects. Although statistics indicate that not all home accidents can be charged to improper environment, many home accidents do occur as a result of unfavorable housing conditions. Local studies in the field of hygiene of housing and in the field of home safety can be correlated effectively.

That home accident prevention is receiving increased recognition in the public health field is evidenced by the responses from several health officers who have commented on the subcommittee's program.

For example, the Health Department of Madison, Wis., publishes a pamphlet *Accidental Deaths*, which is a well annotated statistical review of the problem as it affects the City of Madison. The Health Officer indicates that he is fully appreciative of the fact that home accidents constitute a public health problem, and has established a program which includes the distribution of material on the subject.

The Health Officer of Pasadena, Calif., writes that his Department is actively interested in incorporating home accident prevention work in its program and has published a pamphlet which develops the theme, "Accident Prevention and Public Health."

The Health Officer of Omaha, Nebr., indicates his Department's willingness to coöperate in home accident prevention activities, and the Bureau of Vital Statistics of the Honolulu Board of Health advises that a Committee on Accident Prevention has been organized by the board.

It is interesting to note that one of the most active areas for home accident prevention programs is in Chattanooga, Tenn. The Tennessee Valley Authority states that its activities include a home accident survey in city schools. An analysis of these accidents is made on a district basis. The information is posted in schools so that each school may know the accident experience in its particular district. A recording system has been developed and is being operated by the Junior Red Cross in conjunction with the school systems. Home Accident courses are being conducted in the community, and the Junior courses are given in connection with the school curriculum. A series of leaflets on home safety has been distributed among T.V.A. employees.

As an aid in coördinating existing effective home safety activities of health agencies and other groups, and to stimulate the conduct of additional activities in this field, the National Safety Council and the American Red Cross, with the coöperation of the American Public Health Association and other agencies, is developing a nation-wide home safety educational program.

The prevention of home accidents represents a responsibility and an opportunity for state, county, and city health departments, as well as for nonofficial health agencies interested in the reduction of mortality and morbidity. Experience is showing that effective activities can be developed to meet this responsibility and to render an additional and necessary public health service, in coöperation with associated community safety organizations.

EMPLOYMENT AND PLACEMENT SERVICE

The American Public Health Association announces an expansion of the Employment Service which has become a Counseling and Placement Service for public health workers and employers. This project which is primarily for the service of veterans has been made possible through the coöperation of the United States Public Health Service.

Counseling and guidance services for the various public health specialties are available to candidates through well trained staff consultants. Besides this function the Counseling and Placement Service establishes lines of contact between employers and candidates. It thus serves as a clearing house without recommending or sponsoring candidates or positions.

The facilities of the employment page are open to members free of charge.

Credit Lines

A Proud Record

The *Journal* has had occasions to mark several anniversaries of late but there is none of which it is prouder than the twenty year record of Raymond S. Patterson as editor, compiler, judge, analyst and commentator of the department known (at present) as "A Selected Public Health Bibliography with Annotations."

From the welter of published material dealing with health, probably some million words yearly, Dr. Patterson culls each month some dozen or more items worthy of note, highlights them with provocative headings, and in a few lines pins down something about the report, leaflet, or article which makes it worth reading. The technique is so airy, gossipy, and casual, one forgets the extremely careful and thoughful reading, backed by a wide knowledge of the health field, on which the selections are based. The department is unique; the needling of the reader's interest is expert, painless, even pleasant. To remember that this is the work of one individual is remarkable testimony to Dr. Patterson's catholicity of interest, rare judgment, and skillful pen. The first two decades were the hardest, Dr. Patterson. Your grateful readers know how smoothly you will handle the products of the next twenty!

Who are the vocal antivivisectionists?

Dr. Paul B. Brooks in his column, "Dr. Jones Says," in the November 12 and 19, 1945, *Health News* of the New York State Department of Health, philosophizes on the current antivivisectionist revival thus:

Well, the "antivivisectionists"—from the barrage of propaganda that's been coming over recently, it looks like they're getting ready for another "break-through" attempt when the Legislature meets again: to get a law prohibiting the use of dogs for scientific experiments. It's hard for most people to realize but, if I'm any judge, that represents a greater threat to human welfare, health and safety than the break-through the Germans made over there in Belgium last December.

Being a "dog lover" myself I can understand their reactions. They're crusading—most of 'em—because they've got 'emselves worked up to a point where, to them, the comfort and happiness of dogs is the most important thing in the world. A few of 'em, of course—they're doing it because they're well paid for it. And I've got a feeling they're the ones, principally, that're keeping this movement going. I can understand that too: wanting to keep a good job. . . .

Most any of 'em, though, if they got sick themselves, I'll gamble they wouldn't call an "antivivisectionist" doctor (and there are a few of 'em, around the country). They'd want one that used his head—not his emotions. And what they had—if it happened to be diabetes, we'll say, and insulin'd save their lives, the fact that they had to use dogs in developing it—that wouldn't worry 'em any. *Their* lives'd be worth more to 'em than the lives of any number of dogs. Other people's lives—maybe that's different. . . .

* * * * *

We were speaking, here recently, about the "antivivisectionists": the probability they'd try again to get a bill through prohibiting the use of dogs for scientific experiments. They've been trying for years but the legislature, when it came to people versus pups, they've always put human life and health first. But these aggressive minorities—they're usually well organized for putting on pressure and the legislature—well, if there was equally effective pressure on the other side, at least it'd relieve the strain.

But one trouble in the past, the opposition to this stuff—it's been, mostly, the doctors and other scientific people. They've pointed out what a setback it'd be to medical science if the use of dogs was prohibited. But it's been the human side of it they've stressed. And I suspect the general impression may have been that dog owner's as a whole, favored the prohibition.

But when you stop to think of it "dog owners, as a whole" ought to be right up in the front line, opposing that kind of legislation. The good canines—pets, hunters, workers, show-dogs they're benefiting from experiments made on dogs, the same as the humans are.

Canine distemper—I s'pose that's probably killed more dogs than any other disease. Today most of the valuable dogs are protected against it by vaccination. It was by experimental work with dogs that the vaccine was developed. Rabies—the worst disease a dog can have and one he's liable to be exposed to: the vaccine that protects against that is the result of experiments on dogs.

"Black tongue" (the same as pellagra in humans) feeding experiments on dogs that had it led to the discovery of its cause and cure in dogs and humans, both. It was a matter of supplying a vitamin they lacked. And the prepared dog-foods—what the dog needs for his nutrition—it's been determined by experimenting with dogs.

Yes, sir. As the owner of a pedigreed dog and a contributing member of a humane society, I'm opposed to any legislation that's against the interests of dogs "as a whole"—to say nothing of humans.

WELCOME TO "CANADA'S HEALTH & WELFARE"

The October, 1945, number of *Canada's Health & Welfare* is Vol. 1, No. 1 of this new monthly Bulletin of the Canadian Department of National Health and Welfare. Aside from its general information on health and welfare matters in Canada, it has monthly Personality Sketches, Global Report, and Book Review columns. In the first issue Dr. John T. Phair, Deputy Minister of Health and Hospitals for the Province of Ontario and Charter Fellow of the A.P.H.A., is the subject of the personality sketch; in the second issue Dr. Haven Emerson's *Local Health Units for the National* has the lead review. The two global report columns discuss respectively the United Kingdom Family allowances Act and The First Ten Years of the United States Social Security Act. Our congratulations to the Honorable Brooke Claxton, the Minister of National Health and Welfare, and his staff on these first issues and their "one world" character.

GROWING OLD GRACEFULLY

It's an old story that by 1950 the United States will have 50,000,000 oldsters of over 45. Two items from widely separated parts of the country suggest a growing awareness of the changes this development is making in social and health programs. The Welfare Federation of Cleveland in mid-November opened a month long exhibition entitled "Live Long and Like It" in the Cleveland Health Museum. Intriguing subtitles are, "The Four B's—Baldness, Bifocals, Bridges, and Bulges" and "How Grandma Helped on the Home Front." A special feature of the exhibit was "The Golden Age Hobby Show."

The other item comes from Cooper Union in New York. This fine old College of the people announced for the current winter season a series of lectures on Aging Successfully, by George Lawton, the Director of the Old Age Counselling Bureau. Although designed primarily "for those in the later maturity age range," even the young are invited to get an understanding of parents, grandparents, and older business associates who are often their bosses. "You *Can* Teach an Old Dog New Tricks," and "Grandma Made Johnny Delinquent," are among the lecture titles.

SPECIAL EXHIBIT AT YALE MEDICAL LIBRARY

Credit Lines is indebted to *Science* of September 21, 1945, for the following:

"The Yale Medical Library has now on display a special exhibit arranged in recognition of the distinguished services of Dr. Charles-Edward Amory Winslow, senior member of the faculty of the Yale School of Medicine, who retired at the end of June. Since Dr.

Winslow has for many years conducted seminars on the history of personal hygiene and the public health movement, the first part of the exhibit is devoted to early writings on hygiene, beginning with Galen and his concept of the 'Non-Naturals' in relation to health. Five display cases are devoted to Dr. Winslow's writings. His contributions to the historical and biographical phases of the public health movement occupy a separate display case. His latest monograph, entitled 'The Conquest of Epidemic Disease,' and a selection of his many monographs and papers on ventilation and air conditioning are displayed. The first volumes of the *Journal of Bacteriology* and the *American Journal of Public Health*, of which Dr. Winslow has been editor, the first since its inception in 1916, and the other since April, 1944, are also on view."

NEWS IN NOISE CONTROL

The October 15 *News Bulletin* of the National Noise Abatement Council announces 1945 Achievement Award plaques to five cities for outstanding civic accomplishment in the abatement of needless noise: Chicago among cities with populations of 500,000 or more; Rochester, N. Y., among those of 250,000 to 500,000 population; Salt Lake City, among those of 100,000 to $250,000; Little Rock, among those under 100,000; and Memphis, the Grand National Award Winner. With this issue of the *Bulletin* was enclosed a reprint from the *American Journal of Public Health* of March, 1944, on "The Problem of Industrial Noise" by Paul E. Sabine, Director, Riverbank Laboratories, Geneva, Ill.

INDUSTRIAL HYGIENE INSTITUTE IN DETROIT

The Detroit Industrial Safety Council sends us the program of its two day Institute on Industrial Health, Hygiene, and Nursing held in November, 1945, with the coöperation of both the Michigan and Detroit Health Departments, the Michigan and Wayne County Medical Societies, as well as the Michigan Association of Industrial Physicians and Surgeons, the Michigan Industrial Hygiene Association, and the Detroit Industrial Nurses Association. Speakers included various technical experts from both state and city departments, the University of Michigan School of Public Health, and other universities, as well as physicians, nurses, and engineers from the industrial plants of Detroit.

WELCOME TO "THE PUBLIC AND EDUCATION"

The National Education Association sends us No. 1, Vol. 1, of *The Public and Education* whose purpose is "to present directly to influential leaders in all phases of American life significant information concerning the rôle of education in our country." This first issue is a four page leaflet well printed and interestingly illustrated. The publication may be secured free of charge from the National Education Association, 1201 Sixteenth St., N.W., Washington 6, D. C.

WISCONSIN COÖPERATIVE SCHOOL HEALTH PROGRAM

One of the briefest and best descriptions of a school health program designed to integrate school health with the whole school curriculum, appears in the annual report (1944–1945) to the W. K. Kellogg Foundation of the Wisconsin State Department of Public Instruction, State Board of Health, and coöperating agencies. The report summarizes the progress of the Wisconsin Coöperative School Health Program. We quote: To include in every school provision for

1. Adequate health instruction at each grade level;

2. A healthful physical, mental, emotional and social school environment;
3. Health services to determine the health status of each child at certain intervals, to adjust the school program of the child to meet his needs, and, if possible, to seek correction of remediable defects through the family physician and dentist;
4. Prevention and control of disease among school children;
5. Prevention of accidents and care of emergency conditions at school;
6. Special education for handicapped children;
7. Inservice training and supervision of teachers; and
8. Interpretation of the school health program to the home.

The whole report, with the year's accomplishments made possible by an unusual number of coöperating agencies, is well worth reading. Copies are obtainable from the State Department of Public Instruction, Madison, Wis.

AN ENTERPRISING NEWS LETTER FROM GEORGIA

A *News Letter* sponsored by the Engineering Section of the Georgia Public Health Association has completed its first year with Volume 1, No. 5. This is a well written and very newsy sheet digesting the activities and interests of those in environmental sanitation in Georgia and largely made up of personals which must serve to develop an *esprit d'corps*. The Secretary of the Georgia Public Health Association is Louva G. Lenert of the State Department of Health, Atlanta 3, Ga.

"THE WELFARE POST" OF MISSOURI

Inspired by the new Missouri Constitution that will go into effect in 1946, the Missouri Welfare League, whose purposes are "prevention of delinquency and reduction of crime" publishes *The Welfare Post* in Springfield, Mo. The September, 1945, issue, Vol. 1, No. 1, deals with a variety of health and welfare problems of the state and describes several of Springfield's colleges and other social agencies. It also summarizes the six lectures on "State Health and Welfare Organization under the Missouri Constitution," given last winter under the auspices of the Washington University School of Social Work and the Missouri Association for Social Welfare, as well as other citizen activities leading to the formation of a plan for the new Department of Health and Welfare designed to give the best possible service in the field of public health, public welfare, mental hygiene, and corrections. The new Constitution writes a joint health and welfare department into the law of the state.

TWO REPORTS ON COMMUNITY SERVICES

Lining up home town resources for better living, including intelligent service to the veteran, is the subject of two brief reports appearing almost simultaneously from a group of knowledgeable persons.

The Home Town Job—a report on community services for veterans by the National Committee on Service to Veterans, under the auspices of the National Social Work Council, summarizes what home towns are doing for veterans and how to get the job done right. It is an informative, clear-cut statement, emphasizing skilled leadership and coöperative effort as essentials to success. The successful program of several cities is described.

The Road to Community Reorganization tackles home town problems on a wider front, "the community."

The recommendations of this report are worth careful study, especially those that relate to the establishment of a new federal department headed by a Cabinet secretary, and might well be a subject for discussion at the same meeting at which the Gunn-Platt report on *Voluntary Health Agencies* is reviewed.

Copies of the former report are available from the National Social Work

Council, 1790 Broadway, New York 19, N. Y., *10 cents* each; *6 cents* plus postage for 100 or more copies.

The second report may be secured without charge from the Woman's Foundation, 10 East 40th Street, New York 16, N. Y.

"CHALLENGE TO COMMUNITY ACTION"

From the Social Protection Division, Office of Community War Services in the Federal Security Agency in Washington 25, D. C., comes a 76 page booklet—*Challenge to Community Action*. This is the record of five years' progress in social protection and the lessons learned in some 1,900 communities leading to a pattern for action in the control of venereal disease infections. It should be read by every health worker, for three good reasons: it supplies the most recent information about the weapons with which we fight venereal disease—the drugs, law, education and social treatment; it gives the most approved line of attack—our battle strategy as it were, through the use of community agencies, and it tells where to get reinforcements in a generous list of interested national agencies, books, leaflets, reprints, films, and posters. "The problems," states this booklet, "are bigger than they were in 1919, but we are much better prepared to face them"—thanks in part to this utterly frank and thorough analysis of the strength of our enemy.

Copies are free.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

All books reviewed in these columns may be purchased through the Book Service.

Injury and Death of Bacteria by Chemical Agents—*By Otto Rahn. Normandy, Mo.: Biodynamica,* 1945. 183 pp. Price, $3.60.

The author presents a very interesting discussion on survivor curves of unicellular and multicellular organisms. Explanations of the differences of the curves are presented by presentation of survivor curves of various multicellular and unicellular organisms. The author claims that the difference in the order of death is due to the fact that, in the case of bacteria, when one cell dies, the individual is dead, whereas in the multicellular organism the death of one cell does not necessarily cause death.

A very excellent presentation of the mode of action of disinfectants and antiseptics is given. The limitations of the F.D.A. method of testing disinfectants are discussed, together with other suggested methods. A new method of testing is suggested.

The author has brought together scattered facts about disinfectants and antiseptics which will aid considerably in lessening the confusion that exists in this important field.

W. L. MALLMANN

An Experiment in the Psychiatric Treatment of Promiscuous Girls—*By Ernest G. Lyon, M.D., Helen M. Jambor, Hazle G. Corrigan and Katherine P. Bradway, Ph.D. San Francisco: San Francisco Dept. of Public Health,* 1945. 68 pp. Free to subscribers of the *U. S. Public Health Service Journal.*

Those who have awaited with interest the reports from the San Francisco project coöperatively set up through federal, state, and city auspices, and with the active coöperation of state and local voluntary agencies, will want to read this report of the experience relating to promiscuity among 365 girls and women.

This study confirms the opinion that promiscuity " is individually motivated and can be understood and treated only on an individual basis."

The authors believe that psychiatric facilities may be used fruitfully in connection with a venereal disease clinic to decrease or eliminate promiscuity among a selected group who voluntarily make use of treatment service.

REGINALD M. ATWATER

The Nurse and the Law—*By Gene Harrison, A.B., R.N. Philadelphia: Davis,* 1945. 353 pp. Price, $3.00.

" The nurse cannot be a lawyer any more than she can be a doctor . . . However, just as she is obligated to know many things the application of which is the prerogative of the physician, just so may the well prepared nurse be expected to know many things the application of which belongs to the lawyer and the Court."

Public health nurses would not take exception to the words of Dr. L. E. Dickson who writes the introduction to this book, and they will welcome the chapter written especially for them (Chapter XIII). To many nurses the state laws as they affect them directly, are unfamiliar. They are aware of the

professional and ethical obligations of their practice, but what the law permits them to do, or how the law may place the blame on them for an act they assumed was authorized by a physician, are matters needing a great deal more study than most nurses have given them.

Problems of special interest to public health nurses discussed in this chapter are: standing orders from state and county health departments and in private agencies; parents' refusal to provide care for their sick child; breaking of quarantine; responsibility for reporting communicable disease, medical supervision of the sick, legal status of the medical supervisor, industrial nursing responsibilities, legal aspects of the control of tuberculosis and venereal disease, premarital examinations, prenatal tests, vital statistics, birth certificates, stillbirths and child adoption, protection, placing, and child labor.

As ignorance of the law, especially among those supposedly well educated and trained in a profession, does not excuse a nurse from blame, one lesson that this book drives home is the necessity for knowing the law of the state in which one is practising as it relates to public health and public health nursing.

Administrators of nursing service will find useful information in the chapters on serving as a witness, court testimony, use of confidential records, subpoena, privileged communications, and procedures in cases of criminal action. Altogether a valuable book to have on hand as a reference.

DOROTHY DEMING

A Sanitary Code. Containing Definitions and Interpretations for Guidance of Manufacturers of Paper Packaging Materials and Containers for Perishable Foods—*By J. R. Sanborn. Geneva, N. Y.: New York State Agricultural Experiment Station, Cornell University,* 1945. 16 pp. Mimeographed. Free from publisher, address requests to author.

This code is a statement of sanitary objectives for the guidance of the industry, prepared at the request of certain manufacturers. It covers all forms of paper and paperboard products used in packaging or as containers or closures for perishable foods. Among the items included are: Use of clean, sanitary virgin stock; prohibition against poisonous or deleterious materials or adhesives; waterproofing; protection from contamination; bacteriological standards for disintegrated paper stock and for the finished container and closure; sanitary standards for the converting plant; health and cleanliness of personnel. A plant inspection form is presented which incorporates the detailed requirements.

The code is an elaboration of the standards promulgated by the Public Health Service and other health agencies, seasoned with several years' experience by the author in actual work with the plants and in the laboratory. The requirements are being met by manufacturers whose processes are clean and sanitary. Paperboard produced by the larger mills complies 98 per cent of the time with the limit of 250 colonies per gram of disintegrated stock. Compliance by all members of the industry with the provisions of this code through a system of self policing will win the sympathetic support of health authorities. Administrative health officers, milk and food control officials, and public health engineers should be conversant with this effort of the industry.

A. W. FUCHS

The Art of Home Nursing—*By Betty Quinn Wagner. Philadelphia: Davis,* 1945. 314 pp. Price, $2.00.

This is a book intended for every individual who may, as the author states, need to know simple nursing technics in

everyday home situations. Unfortunately it attempts to cover a very wide field in a very cursory fashion and is scattered in its focus. The reader is left with many questions unanswered, and one wonders what is to be gained by such suggestions as "compile a scrapbook of your Ideal Dream Home" and "read a copy of the Pure Food, Drug and Cosmetic Act at the Public Library."

The difference in function between a registered professional and a licensed practical nurse is not made clear, nor is there mention of visiting and public health nurses, or how to secure them.

In the field of technics to be carried out by the home nurse, the procedures are confused in order, (for example, page 51, in which the "nurse" is instructed to stop and chart the degrees of temperature before cleaning the rectal thermometer), and are at times too technically described for the average "lay" reader. Not many home nurses will be able to use the "conversion tables" (p. 116) in giving medicines and one might question the "therapeutic dietary rules" for "kidney trouble," gall-bladder trouble and other ailments (pp. 137–138).

The author is at her best when describing a limited field of care in which a few simple directions are stressed, as in care of the aged and chronically ill (Chap. XIV). DOROTHY DEMING

Physicians' Guidebook to Public Health Laboratory Services—*Hartford, Conn.: Connecticut State Department of Health,* 1945. 128 pp. Free from publisher.

Drs. Stanley H. Osborn, Friend Lee Mickle, and their colleagues of the Bureau of Laboratories of their Department of Health have put us all in their debt and should be congratulated by their fellow professionals in local and state services for the clear, convenient, and comprehensive information they have set forth for the use of the practitioner of medicine.

Taking advantage of the A.P.H.A. report on *Control of Communicable Diseases* as a background, the authors of this latest contribution to uniformity of fact and resources for administrative purposes, have not only briefed the standard data on etiological agent, source of infection, mode of transmission, and prevalence of each of the 82 disease entities already widely dealt with, but have added ten items, of parasitic infestations and bacterial and other infections, for the identification of which the physician to the sick needs confirmation or correction by laboratory procedures.

The public health laboratory, indispensable alike for the health officer, the epidemiologist, and the family or hospital physician, has in this guidebook done a good job of salesmanship. Taken together with the A.P.H.A. report on *Communicable Disease Control,* now well on toward its third hundred thousand copies, this Connecticut State Department of Health publication of the laboratory diagnostic resources makes it easy to learn and practise modern medicine in at least that field which, since the time of Pasteur, has brought increasing returns in terms of lives saved and illnesses mitigated.

Every physician wants to know exactly what his nearest public health laboratory offers, how specimens must be presented and, above all, the limitations of the laboratory tests in establishing or altering the clinical diagnoses.
HAVEN EMERSON

Penicillin Therapy, *including Tyrothricin and Other Antibiotic Therapy —By John A. Kolmer, M.D. New York: D. Appleton-Century,* 1945. 285 pp. Price, $5.00.

This is an excellent summary of available knowledge on the use of penicillin and other antibiotics in the treatment

of human disease. It contains a very complete bibliography of original publications on the theoretical and practical aspects of these therapeutic agents. New information is accumulating rapidly and it is expected that this volume will soon be outdated. After having made such an excellent beginning, it is assumed that new editions of this book will appear from time to time as the need arises. At the present time this volume provides for the practising physician easy access to available knowledge.

DAVID G. RUTSTEIN

The Book Service reports that one mail on November 21 brought in 40 individual requests and one request for 100 copies of *The Control of Communicable Diseases*, of which the circulation now approaches 200,000 copies.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

They Just Stop Breathing!—Though this is probably not immediately your business, the matter is so out-of-the-ordinary that you will be curious about it. An equalizing pressure chamber has been developed to induce lung rest for patients with bilateral tuberculosis. When respiration stops the lesions in both sides of the lungs have a chance to heal—and they did so in 6 out of 10 far advanced cases.

BARACH, A. L. The Treatment of Pulmonary Tuberculosis in an Equalizing Pressure Chamber. Am. Rev. Tuberc. 52, 2:122 (Aug.), 1945.

Job for DDT?—Continuance of sporadic cases of St. Louis encephalitis since the last epidemic indicates the persistence of an infectious agent. Epidemiologic findings suggest the possibility that blood sucking vectors are involved. Dog ticks, mosquitoes, chicken mites are all suspect. The last word remains to be said.

BLATTNER, R. J., and HEYS, F. M. St. Louis Encephalitis. J.A.M.A. 129, 13:854 (Nov. 24), 1945.

When Does Negligence Become Criminal?—There are a half million hospital attendants in these United States exposed to the occupational hazard of tuberculosis. The percentage of hospitals which now have inadequate tuberculosis control or none is not so disturbing as is the large number that have no post-war plans to create this safeguard.

BRAHDY, L. Control of Occupational Tuberculosis in Hospitals. J. Indust. Hyg. & Toxicol., 27, 8:234 (Oct.), 1945.

Sauer Success Story—In Boston, 3,000 children were immunized against whooping cough with Sauer's vaccine or a detoxified antigen. Of the exposed Sauer-immunized children 9 per cent contracted pertussis; 67 per cent of those "protected" by the detoxified antigen came down with the disease; while 82 per cent of the controls succumbed. It may be added that the other vaccine did modify the course of the disease in a majority of cases.

CRAVITZ, L., and CAULEY, J. H. Pertussis Immunization Program of the Boston Health Department. J.A.M.A. 129, 8:539 (Oct. 20), 1945.

Hungry Mosquitoes—Though this study does not indicate that anopheline mosquitoes necessarily fly in dangerous numbers beyond the "one mile limit," it does show that they will fly further,

especially if no succulent humans are nearer to furnish an easy meal.

EYLES, D. E., *et al.* Long-range Dispersal of *Anopheles quadrimaculatus*. Pub. Health Rep. 60, 43:1265 (Oct. 26), 1945.

Sans Teeth, etc.—Three papers on national dental needs read at the last meeting of our own American Public Health Association are mentioned here because you may want to know what the dentists were talking about when your back was turned. Of every hundred Americans only 27 visit the dentist. Yes, there is a whale of a lot to be done—and a minnow of organization to do it.

FULTON, J. T. A National Dental Care Program: Presentation of the Dental Problem (and two related papers). J. Am. Dent. A. 32, 19 (Oct. 1), 1945.

"We Have Left Undone . . ."—Taxpayers shell out 11 million dollars annually in direct costs for the maintenance of paretics and—don't forget—there are other costly and late manifestations of syphilis. Money loss of income adds an additional charge of 112 million dollars against paresis alone. We will continue to pay through the nose for our earlier sins of omission in venereal disease control.

ISKRANT, A. P. The Economic Cost of Paresis in the United States. Ven. Dis. Inform. 26, 8:175 (Aug.), 1945.

Next Best to a Satisfactory Diet—This authoritative discussion on the use and abuse of vitamins concludes that self-interest alone should induce commercial concerns to censor their advertising to eliminate false claims. Someone should tell this to the pill-makers who make the night air-waves hideous.

JOLLIFFE, N. The Preventive and Therapeutic Use of Vitamins. J.A.M.A. 129, 9:613 (Oct. 27), 1945.

An Old Friend—For more than twenty years periodic health examinations have been preached, but honest investigation indicates that they have played only a minor rôle in preventive medicine. If it is looked upon as a screening process to be given at a reasonable cost the health examination might become a more useful tool, opines this writer.

LEAVELL, H. R. Future of the Periodic Health Examination. South. M. J. 38, 8:549 (Aug.), 1945.

Quote—In patients with scarlet fever treated with penicillin . . . streptococci disappear . . . within forty-eight hours, and if treatment is continued for seven days . . . (they) do not reappear. Unquote. Though the number of cases is small the conclusion, slightly abbreviated, seems worth spreading before you.

MEADS, M., *et al.* Penicillin Treatment of Scarlet Fever. J.A.M.A. 129, 12:785 (Nov. 17), 1945.

Even the Rats Must Be Hungrier—Vessels from foreign ports are bringing in more rats.

OLESEN, R. Increase of Rat Infestation of Vessels Coming to New York. Pub. Health Rep. 60, 44:1295 (Nov. 2), 1945.

What Next!—Experience reported here indicates that women may be allowed to get out of bed on the first or second day postpartum to eat their meals, go to the toilet, and await bed making. No harmful results occurred and the majority of patients liked the new arrangement.

ROSENBLUM, G., *et al.* Early Rising in the Puerperium. J.A.M.A. 129, 13:849 (Nov. 24), 1945.

Not Bad for a Nation of Cripples!—You'll find a lot of useful statistics about national and industrial health in this paper which tells how a wartime labor force augmented largely by 5 million 4-F's and a lot of women and old men produced 170 billion dollars worth of war material. Our farm popu-

lation, severely drained and in dubious physical shape, increased agricultural production by a third. You'll wonder how they ever managed to do the job.

ROWNTREE, L. G. The Coming Age of Industrial Medicine. J.A.M.A. 129, 9:595 (Oct. 27), 1945.

A Psychiatrist Speaks Up—Our democratic principles have but two objectives—to insure and increase the dignity and security of the individual. These goals are reached through equality of men, rule by the people, civil liberties, and economic security. Without democracy there can be no mental health. Health workers all have an inescapable responsibility: to do their full share toward making this a democratic nation.

SCHREIBER, J. The Interdependence of Democracy and Mental Health. Ment. Hyg. 29, 4:606 (Oct.), 1945.

Fluorine in Pill-form—Instead of adding fluorine to drinking water, these investigators administered it in pills. To some children they gave it in conjunction with extra vitamins C and D. Their findings are sufficiently worth while for you to make the effort to hunt out the paper. No summary here to please the lazy.

STREAM, L. P., and BEAUDET, J. P. Inhibition of Dental Caries by Ingestion of Fluoride-Vitamin Tablets. New York State J. Med. 45, 20:2183 (Oct. 15), 1945.

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed in future issues.

THE ADJUSTMENT OF THE NERVOUS VETERAN IN INDUSTRY. By Meyer Brown, M.D. Chicago: Zurich Insurance Cos., 1945. 52 pp. Price, $.10.

BIOENERGETICS AND GROWTH. With Special Reference to the Efficiency Complex in Domestic Animals. By Samuel Brody, Ph.D. New York: Reinhold, 1945. 1023 pp. Price, $8.50.

THE CHEMISTRY AND TECHNOLOGY OF FOOD AND FOOD PRODUCTS. By Morris B. Jacobs, Ph.D. New York: Interscience, 1944. Vol. I—952 pp. Vol. II—890 pp. Price, $19.00.

THE CLINICAL APPLICATION OF THE RORSCHACH TEST. By Ruth Bochner, M.A., and Florence Halpern, M.A. 2d ed. rev. New York: Grune & Stratton, 1945. 331 pp. Price, $4.00.

COLLECTED REPRINTS OF THE GRANTEES OF THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS, 1944, VOL. V. New York: National Foundation for Infantile Paralysis, 1945. Publication No. 33D.

THE CONTINUING BATTLE FOR THE CONTROL OF THE MIND OF YOUTH. By Porter Sargent. Reprinted from the 29th edition of A HANDBOOK OF PRIVATE SCHOOLS. Boston: Porter Sargent, 1945. 158 pp. Price, $1.50.

DAIRY BACTERIOLOGY AND PUBLIC HEALTH. A Handbook for Veterinarians and Milk Sanitarians. By C. S. Bryan, D.V.M. Minneapolis: Burgess Publishing Co., 1945. 33 pp. Price, $1.00.

EFFECTIVE LIVING. By C. E. Turner, Dr.P.H., and Elizabeth McHose, M.A. 2d ed. St. Louis: C. V. Mosby, 1945. 432 pp. 164 illus. Price, $2.00.

ESSENTIALS OF NEURO-PSYCHIATRY. A Textbook of Nervous and Mental Disorders. By David M. Olkon, M.D. Philadelphia: Lea & Febiger, 1945. 310 pp., illus. Price, $4.50.

FACTS AND FIGURES ABOUT INFANTILE PARALYSIS. New York: National Foundation for Infantile Paralysis, 1945. 30 pp. Free from publisher, 120 Broadway, New York 5, N. Y.

FRONTIERS IN CHEMISTRY. Vol. III—ADVANCES IN NUCLEAR CHEMISTRY AND THEORETICAL ORGANIC CHEMISTRY. Edited by R. E. Burk and Oliver Grummitt. New York: Interscience, 1945. 178 pp. 38 illus. Price, $3.50.

THE FUTURE OF THE AMERICAN HOSPITAL SYSTEM. 1945 Hospital Review. Chicago: American Hospital Assn., 1945. 63 pp. Price, $.25.

THE GROWTH OF PERSONNEL MANAGEMENT IN GREAT BRITAIN DURING THE WAR, 1939–1944. By G. R. Moxon. Reprinted from the International Labour Review, December, 1944. London: Institute of Labor Management, 1945. 32 pp. Price, $.25.

HEALTH EDUCATION IN ELEMENTARY AND SECONDARY SCHOOLS. Prepared by the Kansas State Policy-Making Committee on Health Education. Topeka: Kansas State Board of Health, 1945. 82 pp.

HEALTH EDUCATION IN COLLEGES. Prepared by the Kansas State Policy-Making Committee on Health Education. Topeka: Kansas State Board of Health, 1945. 39 pp.

HEALTH SERVICE AREAS. Requirements for General Hospitals and Health Centers. By Joseph W. Mountin, Elliott H. Pennell and Vane M. Hoge. Washington, D. C.: Government Printing Office, 1945. Public Health Bulletin 292. 68 pp. Price, $.25.

HYPNOANALYSIS. By Lewis R. Wolberg, M.D. New York: Grune & Stratton, 1945. 355 pp. Price, $4.00.

THE INDIVIDUAL HOSPITAL. 1945 Hospital Review. Chicago: American Hospital Assn., 1945. 78 pp. Price, $.25.

MARRIAGE IS A SERIOUS BUSINESS. By Dr. Randoph Ray. New York: McGraw-Hill, 1944. 164 pp. Price, $2.00.

THE MATHEMATICS OF DRUGS AND SOLUTIONS. A Work-Book Designed to Supplement Textbooks on Drugs and Solutions for Schools of Nursing. By Harry C. Biddle, M.A., and Disa W. Sitler, R.N. Philadelphia: Davis, 1944. 107 pp. Price, $1.00.

MENTAL DISORDERS IN LATER LIFE. Edited by Oscar J. Kaplan. Stanford: Stanford University Press, 1945. 436 pp. Price, $5.00.

THE NEWSPAPER. ITS MAKING AND ITS MEANING. By the Members of the Staff of the New York Times. New York: Scribner's, 1945. 207 pp. Price, $2.00.

MODERN UROLOGY FOR NURSES. By Sheila Maureen Dwyer, R.N., and George W. Fish, M.D. 2d ed. rev. Philadelphia: Lea & Febiger, 1945. 287 pp., illus. Price, $3.25.

NURSING IN CLINICAL MEDICINE. By Julius Jensen, Ph.D., and Deborah Maclurg Jensen, R.N. 2nd ed. New York: Macmillan, 1945. 829 pp. Price, $3.50.

NUTRITION IN REVIEW. Report of the New York State Joint Legislative Committee on Nutrition. Albany: N. Y. State Joint Legislative Committee on Nutrition, 1945. Legislative Document 1945 No. 49. 191 pp. Free from Thomas C. Desmond, 94 Broadway, Newburgh, N. Y.

OFF THE JOB LIVING. A Modern Concept of Recreation and Its Place in the Postwar World. By G. Ott Romney. New York: A. S. Barnes, 1945. 232 pp. Price, $2.75.

ORGANIZED LABOR'S PARTICIPATION IN SOCIAL WORK. Bulletin of the Russell Sage Foundation Library 163. New York: Russell Sage Foundation, 1945. 8 pp. Price, $.10.

POPULATION. DIFFERENTIAL FERTILITY 1940 AND 1910. WOMEN BY NUMBER OF CHILDREN EVER BORN. 16TH CENSUS OF THE UNITED STATES: 1940. Prepared under the supervision of Dr. Leon E. Truesdell. Washington, D. C.: Government Printing Office, 1945. 410 pp. Price, $.65.

PREPAYMENT MEDICAL CARE ORGANIZATIONS. By Margaret C. Klem. 3rd ed. Washington, D. C.: Government Printing Office, 1945. Bureau Memorandum 55, 148 pp. Price, $.25.

A PSYCHIATRIC PRIMER FOR THE VETERAN'S FAMILY AND FRIENDS. By Alexander G. Dumas, M.D., and Grace Keen. Minneapolis: University of Minnesota Press, 1945. 214 pp. Price, $2.00.

PSYCHOLOGY FOR NURSES. Designed and Written for Student Nurses. By Bess V. Cunningham, Ph.D. New York: D. Appleton-Century, 1946. 364 pp. 51 illus. Price, $3.00.

PUBLIC HEALTH AND WELFARE ORGANIZATIONS IN CANADA. The Postwar Problems in the Canadian Provinces. By Harry M. Cassidy, Ph.D. Boston: Bruce Humphries, Inc., 1945. 464 pp. Price, $5.00 paper; $6.00 cloth.

THE ROMANCE OF HUMAN ARCHITECTURE. By Maurice Chideckel, M.D. Boston: Bruce Humphries, Inc., 1945. 107 pp. Price, $2.00.

RULES AND REGULATIONS FOR THE CONTROL OF COMMUNICABLE DISEASES. By the Division of Communicable Diseases, Department of Public Health. Springfield, Ill.: Dept. of Health, 1945. 89 pp.

THE STORY BEHIND GREAT MEDICAL DISCOVERIES. By Elizabeth Rider Montgomery. New York: McBride, 1945. 247 pp. Price, $2.00.

SUGGESTED SCHOOL HEALTH POLICIES. A Charter for School Health. 2d ed. rev. New York: Health Education Council, 1945. 48 pp. Price, $.25.

TRENDS IN MENTAL DISEASE. By the American Psychopathological Association. New York: King's Crown Press, 1945. 120 pp. Price, $2.00.

VISITS AND CASES IN NONOFFICIAL AGENCIES. By Dorothy E. Wiesner and Margaret M. Murphy. New York: National Organization for Public Health Nursing, 1945. 16 pp. Price, $.50.

VITAL STATISTICS OF THE UNITED STATES, 1943. By the Bureau of the Census of the U. S. Department of Commerce. Prepared under the supervision of Halbert L. Dunn, M.D. Part I. Place of Occurrence. 228 pp. Price, $1.50. Part II. Place of Residence. 580 pp. Price, $2.50. Washington, D. C.: Government Printing Office, 1945.

VITAMIN A IN BUTTER. Prepared by the Bureau of Dairy Industry, U. S. Department of Agriculture. Washington, D. C.: Government Printing Office, 1945. Miscellaneous Publication 571. 14 pp.

VOCATIONAL AND PROFESSIONAL MONOGRAPHS. PUBLIC RELATIONS. By Edward L. Bernays. Boston: Bellman Publishing Co., 1945. 23 pp. Price, $.75.

WAR NEUROSES. By Roy R. Grinker, Lt. Col., M.C., and John P. Spiegel, Major, M.C. Philadelphia: Blakiston, 1945. 145 pp. Price, $2.75.

A WORKBOOK IN CHILD DEVELOPMENT (AND TEACHERS' GUIDE). By George E. Schlesser, Ph.D. Philadelphia: Saunders, 1945. 138 pp. Price, $1.00.

WORKING CONDITIONS AND EMPLOYEE SERVICES. By B. J. Cohen and M. M. Towy-Evans. London: Institute of Labour Management, 1945. 87 pp. Price, $.50.

A SANITARY CODE. Containing Definitions and Interpretations for Guidance of Manufacturers of Paper Packaging Materials and Containers for Perishable Foods. By J. R. Sanborn. Geneva: N.Y.S. Agricultural Experiment Station, 1945. 16 pp. Free from publisher. Address requests to J. R. Sanborn.

ASSOCIATION NEWS

PUBLIC HEALTH ASSOCIATION OF NEW YORK CITY HOLDS VICTORY MEETING

The Public Health Association of New York City held a two day meeting in New York City on December 13 and 14 in collaboration with the American Public Health Association. Although emphasis was laid especially on developments locally, a good part of the program was devoted to the transitional period between war and peace, and to the broad orientation of public health workers. About 700 persons were in attendance. The meetings were held under the presidency of Sol Pincus, C.E., Deputy Commissioner of Health, New York City Department of Health; Frank Kiernan of New York City was Chairman of the Program Committee and Secretary. The Committee on Arrangements was headed by John L. Rice, M.D., and that on publicity by Horace H. Hughes. Participants from outside New York City included Abel Wolman, Dr.Eng., Baltimore; Ira V. Hiscock, Sc.D., Yale University, New Haven; George T. Palmer, Dr.P.H., U. S. Public Health Service, Washington; Warren F. Draper, M.D., Deputy Surgeon General, U. S. Public Health Service, Washington; Theodore A. Olson, University of Minnesota, Minneapolis; J. J. Bloomfield, Industrial Hygiene Division of the U. S. Public Health Service, Washington; Robert H. Riley, M.D., State Department of Health, Baltimore; W. Palmer Dearing, M.D., Division of Public Health Methods, U. S. Public Health Service, Washington; C.-E. A. Winslow, Dr.P.H., New Haven; Edward S. Rogers, M.D., Asst. Commissioner for Medical Administration, New York State Department of Health, Albany; Mayhew Derryberry, Ph.D., Chief of Field Activity in Health Education, U. S. Public Health Service, Washington; and Amos Christie, M.D., Department of Pediatrics, Vanderbilt University School of Medicine, Nashville.

GOVERNING COUNCIL ELECTIONS

The A.P.H.A. Governing Council has completed its 1945 election of Fellows, Life Members, and Affiliated Societies. The South Dakota Public Health Association was admitted as an Affiliated Society, 7 Life Members were approved, and the following individuals were elected to Fellowship.

Health Officers Section

George H. Becker, M.D., Director, Bureau of Communicable Diseases, San Francisco Department of Public Health, San Francisco, Calif.

Millard B. Bethel, M.D., M.P.H., Health Officer, Cabarrus County Health Department, Concord, N. C.

Philip E. Blackerby, M.D., State Health Commissioner, Louisville, Ky.

Leroy E. Burney, M.D., M.P.H., State Health Commissioner, Indianapolis, Ind.

George F. Campana, M.D., M.P.H., State Health Officer, Bismarck, N. D.

F. R. Nicholas Carter, M.D., Health Officer and Secretary, Board of Health, South Bend, Ind.

Albert C. Edwards, M.D., M.P.H., Director, St. Clair County Health Dept., Port Huron, Mich.

Floyd M. Feldman, M.D., Dr.P.H., Health Officer, Rochester City Health Dept., Rochester, Minn.

Henry A. Holle, M.D., Surgeon, U. S. Public Health Service, Washington, D. C. (on UNRRA assignment abroad)

Roscoe P. Kandle, M.D., M.P.H., Director, Division of Local Health Service, State Board of Health, New Orleans, La.

Jacob H. Landes, M.D., M.P.H., Senior Health Officer, Department of Health, New York, N. Y.

Frederick D. Mott, M.D., C.M., Chief Medical Officer, Farm Security Administration, Washington, D. C.

Frederick A. Musacchio, M.D., M.S.P.H., Director, Laredo-Webb County Health Unit, Laredo, Tex.

Emil A. Palmquist, M.D., M.P.H., City Health Commissioner, Seattle, Wash.

Angelo M. Perri, M.D., M.P.H., Chief of Communicable Disease Division, Department of Public Health, Philadelphia, Pa.

William A. Powell, M.D., Contra Costa County Health Officer, Martinez, Calif.

C. L. Putnam, M.D., M.S.P.H., Deputy Commissioner and Director of Local Health Services, State Department of Health, Des Moines, Iowa

Arthur L. Ringle, M.D., C.P.H., Director, State Department of Health, Seattle, Wash.

Mason Romaine, M.D., M.P.H., Health Officer, Petersburg, Va.

Roy M. Seideman, M.D., Dr.P.H., Industrial Hygiene Physician, State Department of Health, Hartford, Conn.

Ellis D. Sox, M.D., C.P.H., Chief, Division of Local Health Service, State Department of Public Health, San Francisco, Calif.

Major General Morrison C. Stayer, M.C., Chief Surgeon, North African-Mediterranean Theater of Operations, U. S. Army (overseas address)

James L. Troupin, M.D., M.S.P.H., District Health Officer, Health Department, New York, N. Y.

I. Oscar Weissman, M.D., M.P.H., Surgeon (R), U. S. Public Health Service; Director, Muskogee City-County Health Dept., Muskogee, Okla.

Maurice S. Whiteside, M.D., Health Officer, Cullman County Health Dept., Cullman, Ala.

John M. Whitney, M.D., Superintendent of Health, New Orleans, La.

Charles L. Wilbar, Jr., M.D., President, Territorial Board of Health, Honolulu, T. H.

Ralph C. Williams, M.D., Assistant Surgeon General and Chief, Bureau of Medical Services, U. S. Public Health Service, Washington, D. C.

Laboratory Section

Claude S. Bryan, D.V.M., Ph.D., Professor and Head, Department of Surgery and Medicine, Michigan State College, East Lansing, Mich.

Irma L. Comstock, B.S., Principal Biologist, State Board of Health Laboratory, Jefferson City, Mo.

William A. Feirer, M.D., Sc.D., Vice-President and Director, Medical Research Division, Sharp & Dohme, Philadelphia, Pa.

Harald N. Johnson, M.D., Member of Staff and Director of Rabies Study, International Health Division, Rockefeller Foundation, Montgomery, Ala.

David B. Lackman, Ph.D., Assistant Bacteriologist, U. S. Public Health Service, Hamilton, Mont. (on military leave)

Einar Leifson, Ph.D., Professor of Bacteriology, University of South Dakota, Vermillion, S. D.

Benjamin S. Levine, Ph.D., Director, Division of Laboratories, State Board of Health, Pierre, S. D.

Robert P. Myers, Ph.D., Chief Bacteriologist, Research Laboratory, National Dairy Products Corp., Baltimore, Md.

Wade W. Oliver, M.D., Professor of Bacteriology, Long Island College of Medicine, Brooklyn, N. Y.

Clarence C. Ruchhoft, B.S. in Ch.E., Principal Chemist, U. S. Public Health Service, Cincinnati, Ohio

Roy Schneiter, Ph.D., Bacteriologist in Charge, Bacteriological Section, Industrial Hygiene Research Laboratory, National Institute of Health, Bethesda, Md.

Robert M. Shaw, M.D., D.P.H., Professor of Bacteriology and Hygiene, University of Alberta, Edmonton, Alberta

Lt. Comdr. Frank H. Stubbs, USN, Executive Officer, Duke University N.R.O.T.C., (formerly Director, Branch Laboratory, Georgia State Health Dept.), Albany, Ga.

A. Elizabeth Verder, Ph.D., Bacteriologist, National Institute of Health, Bethesda, Md.

Vital Statistics Section

Marta Fraenkel, M.D., Medical Advisor, Bureau of Research and Statistics, Social Security Board, Washington, D. C.

Marjorie E. Gooch, Sc.D., Chief, Health Statistics Section, Division of Statistical Research, Children's Bureau, Washington, D. C.

Iwao M. Moriyama, Ph.D., C.P.H., Senior Social Science Analyst, Bureau of the Census, Washington, D. C.

Marcelino Pascua-Martinez, M.D., Associate Professor, Johns Hopkins School of Hygiene and Public Health, Baltimore, Md.

Elliott H. Pennell, B.S., Senior Statistician, U. S. Public Health Service, Bethesda, Md.

A. Hardisty Sellers, M.D., D.P.H., Medical

Officer in charge of Medical Statistics, Royal Canadian Air Force, Toronto, Ontario

Engineering Section

Col. William A. Hardenbergh, Sn.C., Director, Sanitary Engineering Division, Surgeon General's Office, U. S. Army, Washington, D. C.

Arthur H. Herberger, C.E., M.S., Director, Division of Sanitation, Nassau County Department of Health, Mineola, N. Y.

Industrial Hygiene Section

August Baier, M.D., Medical Director, Des Moines Ordnance Plant, U. S. Rubber Co., Des Moines, Iowa

Edgar C. Barnes, B.S., Industrial Hygiene Engineer, Westinghouse Electric Corporation, East Pittsburgh, Pa.

Rodney R. Beard, M.D., M.P.H., Assistant Professor of Public Health and Preventive Medicine, Stanford Medical School, San Francisco, Calif.

Harold T. Castberg, M.D., Chief, Bureau of Adult Health, State Department of Public Health, Berkeley, Calif.

Walter E. Doyle, M.D., Chief, Medical Unit, Industrial Hygiene Division, U. S. Public Health Service, Washington, D. C.

John W. Dugger, M.D., Director, Division of Industrial Hygiene and Factory Inspection, State Board of Health, Jackson, Miss.

Anna M. Fillmore, R.N., M.P.H., Industrial Nursing Consultant, Visiting Nurse Service of New York, New York, N. Y.

Donald O. Hamblin, M.D., Medical Director, American Cyanamid Co., New York, N. Y.

Clifford Kuh, M.D., Dr.P.H., Director of Public Health, Permanente Foundation Hospital, Oakland, Calif.

Hedwig S. Kuhn, M.D., Ophthalmologist; Member, Industrial Vision Institute, Purdue University; Secretary, Joint Committee of Industrial Ophthalmology, American Medical Association and American Academy of Ophthalmology, Hammond, Ind.

Melville H. Manson, M.D., F.A.C.S., Medical Director, American Telephone and Telegraph Co., New York, N. Y.

John M. McDonald, M.D., D.P.H., Director, Bureau of Occupational Diseases, City Health Department, Baltimore, Md.

Clarence W. Muehlberger, Ph.D., Toxicologist, State Department of Health, Lansing, Mich.

Samuel M. Peck, M.D., Special Consultant on Dermatology and Medical Director (R), U. S. Public Health Service, New York, N. Y.

Crit Pharris, M.D., M.P.H., Assistant Medical Director, United Aircraft Corp., East Hartford, Conn.

John J. Prendergast, M.D., Medical Director, Chrysler Corporation, Detroit, Mich.

George H. Zerbst, M.D., Director, Division of Industrial Health, State Board of Health. Columbia, S. C.

Food and Nutrition Section

Anna de Planter Bowes, M.A., Chief, Division of Nutrition, Bureau of Maternal and Child Health, State Department of Health, Harrisburg, Pa.

Frank L. Gunderson, Ph.D., Director of Nutrition, the Quaker Oats Co., and Executive Secretary, Food and Nutrition Board, National Research Council, Washington, D. C.

Icie Macy Hoobler, Ph.D., Director, Research Laboratory, Children's Fund of Michigan, Detroit, Mich.

C. Frances MacKinnon, M.S., Consultant in Nutrition, Unit for Inter-American Cooperation, Children's Bureau, Washington D. C.

Elsa Orent-Keiles, Sc.D., Principal Nutrition Chemist in Charge of Nutrition Investigations, U. S. Department of Agriculture, Washington, D. C.

Telford W. Workman, D.V.M., Ph.D., Production and Technical Director, Northeast District, The Borden Co., Bridgeport, Conn.

Maternal and Child Health Section

Samuel R. Berenberg, M.D., Chief, Child Health Services, Health Department, New York, N. Y.

Lt. Comdr. Tipton M. Jolliffe (MC), U.S. N.R., Medical Officer of Health, Epidemiology Unit No. 21, N.A.T.B., Corpus Christi, Tex.

Viktor O. Wilson, M.D., M.P.H., Director, Division of Child Hygiene, State Department of Health, Minneapolis, Minn.

Public Health Education Section

Theron H. Butterworth, Ph.D., Associate Milk Specialist, U. S. Public Health Service (at present on leave of absence to complete a year of graduate study in Health Education), Chapel Hill, N. C.

Donald A. Dukelow, M.D., Director of Public Health Education, State Department of Health, Minneapolis, Minn.

Eleanor Hassell, M.P.H., Assistant Director of Health Education, State Board of Health, Jackson, Miss.

Ann W. Haynes, M.P.H., Acting Chief, Bureau of Health Education, State Department of Public Health, San Francisco, Calif.

Jean Henderson, Chief, Public Relations and Recruitment, Cadet Nurse Corps, U. S. Public Health Service, Washington, D. C.

Raymond U. Hilleman, M.A., Health Education Secretary, Ohio Public Health Association, Columbus, Ohio

Rosemary M. Kent, M.A., Health Consultant, City Public Schools, Winston-Salem, N. C

Adelaide R. Ross, M.Ed., Associate in Health Education, National Tuberculosis Association, New York, N. Y.

Alice L. Spillane, M.P.H., Chief, Division of Health Education, State Department of Health, Seattle, Wash.

Public Health Nursing Section

Ruth Albrecht, R.N., B.S., (formerly Assistant Director, Division of Public Health Nursing, Texas State Department of Health), at present working toward M.A. at University of Chicago, Chicago, Ill.

Adaline Chase, R.N., M.A., Assistant Professor, Department of Nursing Education, School of Education, University of Pennsylvania, Philadelphia, Pa.

Beatrice M. Clutch, R.N., M.A., Acting Director, Nursing Education Division, George Peabody College, Nashville, Tenn.

Pearl P. Coulter, R.N., M.S., Associate Professor of Public Health Nursing, University of Colorado, Boulder, Colo.

Judith A. Davies, M.S., R.N., Director of Public Health Nursing, Santa Barbara County Health Department, Santa Barbara, Calif.

Norma B. Eskil, B.S., R.N., Director of Public Health Nursing, Health Department, Flint, Mich.

Ella M. Hott, R.N., M.A., Director, Division of Public Health Nursing, State Board of Health, Jefferson City, Mo.

Janet Jennings, R.N., M.A., Educational Director, State Department of Public Health, Springfield, Ill.

Marie L. Johnson, R.N., B.S., Assistant Director, Nursing Bureau, Metropolitan Life Insurance Co., New York, N. Y.

Winifred M. Kellogg, B.S., R.N., Educational Director, Visiting Nurse Association, Detroit, Mich.

Esther M. Latimer, R.N., M.P.H., Assistant Professor of Nursing, School of Nursing, University of Michigan, Ann Arbor, Mich.

Amy A. MacOwan, R.N., M.A., Assistant Professor of Public Health Nursing, School of Nursing, University of California Berkeley, Calif.

Ida McRoberts, R.N., M.A., Director of Public Health Nursing, Cattaraugus County Department of Health, Olean, N. Y.

Ann S. Nyquist, R.N., Acting Director of Public Health Nursing, State Department of Health, Minneapolis, Minn.

Irma E. Reeve, R.N., M.A., Associate Director, New Haven Visiting Nurse Association, New Haven, Conn.

Elizabeth L. Sewell, R.N., M.A., District Supervising Nurse, State Department of Health, New York, N. Y.

Pearl Shalit, R.N., M.S., Executive Director, St. Paul Family Nursing Service, St. Paul, Minn.

Margaret S. Taylor, R.N., M.A., Public Health Nursing Consultant, Tuberculosis Control Division, U. S. Public Health Service, Washington, D. C.

Grace L. Unzicker, R.N., B.S., Senior Assistant Nurse Officer (R), Tuberculosis Control Division, U. S. Public Health Service, Washington, D. C.

Epidemiology Section

Major Claude M. Eberhart, M.C., Chief, Division of Preventive Medicine, Headquarters United Kingdom Base (address overseas)

William W. Frye, M.D., Ph.D., Professor of Preventive Medicine and Public Health, Vanderbilt University School of Medicine, Nashville, Tenn.

John R. Paul, M.D., Professor of Preventive Medicine, Yale University Medical School, New Haven, Conn.

Walter B. Quisenberry, M.D., M.P.H., Venereal Disease Control Officer, State Health Department, Lincoln, Nebr.

Erich Seligmann, M.D., Chief Bacteriologist, Beth Israel Hospital, New York, N. Y.

I. Jackson Tartakow, M.D., M.S.P.H., Epidemiologist, Nassau County Department of Health, Mineola, N. Y.

School Health Section

Robert M. Robbins, M.B., Ch.B., Surgeon (R), U. S. Public Health Service; Assistant Commissioner of Health, Macon, Ga.

Benjamin Sachs, M.D., M.S.P.H., Director, Bureau of Maternal and Child Hygiene, City Board of Health, Hartford, Conn.

Sue H. Thompson, M.D., M.P.H., Commissioner of Health, Columbia County Health Department, Hudson, N. Y.

Dental Health Section

Linwood G. Grace, D.D.S., Chief, Dental Division, State Department of Health, Harrisburg, Pa.

Unaffiliated

Matthew H. Griswold, M.D., Dr.P.H., Chief, Division of Cancer Research, State Department of Health, Hartford, Conn.

Major M. J. Plishner, Sn.C., Chief, Medical Technical Intelligence Teams, European Theatre of Operations, Carlisle Barracks, Pa.

Srish Chandra Seal, M.B., D.P.H., Assistant Professor of Epidemiology and Vital Statistics, All-India Institute of Hygiene and Public Health, Calcutta, India

Richard G. Soutar, M.D., Director, Department of Health and Development, City Unified School District, Sacramento, Calif.

Paul H. Stevenson, M.D., Dr.P.H., Senior Surgeon, Division of Mental Hygiene, U. S. Public Health Service, Washington, D. C.

Major James M. Suter, M.C., 4th Military Government Group, 5th Provisional Battalion, Civil Affairs Staging Area, Monterey, Calif.

John W. Williams, M.D., Surgeon, U. S. Public Health Service, U. S. Marine Hospital, Detroit, Mich.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Reynaldo R. East, M.D., Casilla 119, Angol. Malleco, Chile, S. A., Medico-Jefe Sanitario de la Provincia de Malleco

Clayton B. Mather, M.D., Monroe County Dept. of Health, Monroe, Mich., Director

Laboratory Section

Charles W. Buggs, Ph.D., Wayne Univ., College of Medicine, Detroit 26, Mich., Asst. Prof. of Bacteriology

Ruth M. Chesbro, M.A., 2436 Channing Way, Berkeley 4, Calif., Assoc. in Bacteriology, Univ. of California

Preston E. Harrison, M.D., Univ. of Chicago, Dept. of Bact., Chicago, Ill., Asst. Prof. of Bacteriology

Lt. Col. Theodore W. Keiper, Sn.C., 9th Service Command Laboratory, Fort Lewis, Wash., Director

Esther Langholtz, 300 E. 3 St., New York 9, N. Y., Laboratory Technician, Mason General Hospital

Margery J. Maggs, 2420 Virginia St., Berkeley, Calif., Assoc. in School of Public Health, Univ. of California

Gustave A. Matson, Ph.D., 344 S. 13 E., Salt Lake City, Utah, Assoc. Prof. of Bacteriology, Univ. of Utah

Irwin S. Neiman, M.D., 710 S. Wolcott Ave., Chicago 12, Ill., Assoc. Prof. of Bacteriology and Public Health, Chicago Medical School

Charles F. Pait, Jr., M.D., 1200 N. State St., Los Angeles 33, Calif., Director, Communicable Disease Laboratory, Los Angeles General Hospital

Hugh Parkhurst, P. O. Box 135, Gloucester, Mass., Senior Laboratory Technician, U. S. Army

James E. Prier, New York State College of Veterinary Medicine, Ithaca, N. Y., Student

Vital Statistics Section

Dorothy E. Campbell, R.N., Doswell, Va., Junior Statistician, State Bureau of Vital Statistics

Engineering Section

Floyd B. Taylor, Regional Station Hospital, Fort Belvoir, Va., Sanitary Engineer on Staff of Post Surgeon

Industrial Hygiene Section

George J. Taylor, 2002 Acton St., Berkeley, Calif., Industrial Hygiene Engineer, Bureau of Adult Health, State Dept. of Public Health

Food and Nutrition Section

Dorothy L. Hussemann, M.S., 1106 W. Nevada St., Urbana, Ill., Asst. Prof., Univ. of Wisconsin (on leave)

LaVon A. Thompson, 717 Hightower Bldg., Oklahoma City 2, Okla., Director, Dairy Council of Oklahoma City

Pedro I. Vargas, M.D., Plaza Principal, Buenaventura, Colombia, S. A., Student of Public Health, Yale Univ.

Maternal and Child Health Section

Margaret M. Lawrence, M.D., M.S.P.H., 2713 Meharry Blvd., Nashville 8, Tenn., Asst. Prof. of Pediatrics, Meharry Medical College

Public Health Education Section

Aaron L. Ackerman, D.D.S., 963 Park Ave., Elizabeth 3, N. J., Chairman, Public Health Comm., Chamber of Commerce

Sallie E. Bright, 151 White Plains Road, Bronxville, N. Y., Exec. Director, National Publicity Council for Health and Welfare Services, Inc.

Augusta Browder, R.N., 7101 Fourth Ave.,

Brooklyn, N. Y., Cardiac Worker, Staten Island Tuberculosis and Health Committee

Angeles Cebollero, M.S.P.H., Insular Dept. of Health, Santurce, P. R., Health Educator

Michael B. Crowley, 203 City Hall, Peoria, Ill., Pres., Board of Health

Catherine Emig, 130 E. 24 St., New York 10, N. Y., Assoc. Director, National Publicity Council for Health and Welfare Services, Inc.

Margaret J. Idema, M.S.P.H., City-County Health Dept., Winston-Salem, N. C., Health Educator

Mazie J. Jones, M.A., M.S.P.H., Health Dept., Fayetteville, N. C., Health Educator

Pauline R. Kibbe, Governor's Office, State Capitol, Austin 11, Tex., Exec. Secy., Good Neighbor Commission of Texas

Milo T. Means, 308 State House, Boise, Idaho, State Supervisor, Vocational Rehabilitation, State Board for Vocational Education

Lee Meyerson, A.M., Univ. of California School of Public Health, Berkeley 4, Calif., Jordan Fellow in Public Health

Vesta C. Muehleisen, 202 Bank of America Bldg., San Diego 1, Calif., Exec. Secy., San Diego Social Hygiene Assn.

Frank A. Reich, Lake Tomahawk, Wisc., Supt. and Steward, Lake Tomahawk State Camp

Charlotte B. Rickman, M.S.P.H., Majestic Bldg., Suite 305, Quincy, Ill., Health Education Representative, State Dept. of Public Health

Rudolf Schick, 700 Riverside Drive, New York 31, N. Y., Publisher of Health Education material

George M. Shahan, 117 W. 9 St., Los Angeles, Calif., Exec. Secy., Washington Tuberculosis Assn.

Public Health Nursing Section

Hazel G. Barkley, 1127 St. Paul St., Baltimore 2, Md., Public Health Nurse, Johns Hopkins Hospital

Mary Brimberry, R.N., 116 Quincy, Hancock, Mich., Supervising Nurse, Houghton-Keweenaw-Baraga District Health Dept.

Ruth N. Crawford, 65 Court St., Room 403, Buffalo 2, N. Y., Asst. District Supervising Nurse, U. S. Public Health Service

Ruth M. Herz, 57 Ardsley Rd., Montclair, N. J., Staff Nurse, Elizabeth Visiting Nurse Assn.

Sister Agnes Marie, R.N., Our Lady of the Lake School of Nursing, Baton Rouge, La., Director

Beatrice M. Streit, 417 Main St., Glen Ellyn, Ill., Staff Nurse, DuPage County Health Dept.

School Health Section

Grace C. Hamman, M.A., 2622 Kuahine Drive, Honolulu, T. H., Territorial Director, Bureau of Sight Conservation and Work With the Blind

Luther A. Tarbell, M.D., College Hospital, Pullman, Wash., College Physician, Washington State College

Ruth K. Wellington, Oak Hill, Arkport, N. Y., Health Teacher, Hornell High School

Dental Health Section

Neal W. Chilton, D.D.S., 945 Aldus St., New York 59, N. Y., Student, DeLamar Institute of Public Health, Columbia Univ.

E. Horace Jones, D.D.S., 3025 Daytona Ave., Cincinnati, Ohio, Supervisor of Oral Hygiene Services, Board of Education.

Louis Kroll, D.M.D., 947 Montgomery St., Brooklyn 13, N. Y.

Edna Miller, D.M.D., 310 Cedar St., New Haven, Conn., Student in Public Health, Yale Univ.

William C. Webb, Jr., D.D.S., 311 S. Juniper St., Philadelphia 7, Pa., Exec. Director, Philadelphia Mouth Hygiene Assn.

Unaffiliated

Lewis J. Graham, M.D., Corning Glass Works, Corning, N. Y., Medical Director

T/4 Mark F. Luxford, H.Q. Co. M.D.E.T.S., Fitzsimons General Hospital, Denver, Colo., Anatomy Instructor

A. Robert Peskin, M.D., 20 Park Ave., New York, N. Y., Medical Director, New York City Dept. of Welfare

DECEASED MEMBERS

Neal E. Blanton, Milwaukee, Ore., Elected Member 1942, Unaffiliated

Severance Burrage, D.P.H., Denver, Colo., Elected Member 1897, Charter Fellow, Laboratory Section

Herbert O. Calvery, Ph.D., Washington, D. C., Elected Member 1941, Food and Nutrition Section

Francis A. Campana, M.D., Union City, N. J., Elected Member 1941, Health Officers Section

P. Conner Hulse, D.D.S., Palmyra, N. J., Elected Member 1937, Dental Health Section

Verne L. G. Wilt, D.D.S., Los Angeles, Calif., Elected Member 1940, Public Health Education Section

A.P.H.A. membership application blank on page XXXIII.

EMPLOYMENT SERVICE

The Association Employment Service seeks to bring to the attention of appointing Officers the names of qualified public health personnel and to act as a clearinghouse on employment. This is a service of the Association conducted without expense to the employer or employee.

From the registry of persons available, selected announcements are published from time to time. Appointing officers may obtain lists of all registrants on request.

Address all correspondence to the Employment Service, American Public Health Association, 1790 Broadway, New York 19, N. Y.

Positions Available

(Supplemental to list in December Journal)

Tuberculosis Control Officer Wanted: Position of Director of Division of Tuberculosis Control, Seattle Department of Health, to be available January 1, 1946. Applicant must be physician qualified for license in State of Washington and have specialized training and/or experience in clinical tuberculosis and public health tuberculosis control. Full-time position, salary $5,940 plus reimbursement for travel. Apply Emil E. Palmquist, M.D., Commissioner of Health, Seattle 4, Washington.

Wanted Immediately: Medical Director to administer state-wide services to crippled children. Minimum requirements include public health background, special training in pediatrics. Write giving personal data, background and training. Salary $4,500. Address Carlyle D. Onsrud, Executive Director, State Welfare Board, Bismarck, N. D.

Wanted: Experienced Health Officer by newly organized Bi-County Health Department, Southern Illinois. Starting salary $5,000 plus travel allowance. Applications received by Mr. Lloyd Cannon, Olmstead, Ill.

Western state seeks two physicians for county health officer positions, one paying $4,800, the other $5,000. Applicants must be graduates in medicine from approved medical school, have not less than 1 year clinical experience in hospital having standards approved by the AMA, successful completion of not less than 1 academic year graduate work in fundamental subjects of preventive medicine in a recognized school of public health. Address **Box RL,** Employment Service, A.P.H.A.

Health Educator Wanted: Must be experienced in community organization on broad health lines. Position expected to lead to executive secretaryship. Salary $2,600. Suburb of New York City. Address **Box CO,** Employment Service, A.P.H.A.

Health Officers Wanted: Positions for bureau directors and district and county health officers now open. Salaries range from $3,900 to $8,400 varying with education and experience and duties assigned. Liberal retirement plan and travel allowance. Write Merit System Supervisor, Florida State Board of Health and Crippled Children's Commission, 201 Professional Building, Gainesville, for application form and full details.

Louisville and Jefferson County Health Department urgently in need of two public health nurses (one Negro, one white) to act as tuberculosis consultants, advise field nurses regarding home visits, participate in student educational program and staff educational program and act as consultants to tuberculosis clinics. Beginning salary $175 per month. Apply Prentiss M. Terry, Director, Louisville Civil Service Board, 300 City Hall, Louisville, Ky.

Wanted: Qualified physicians and nurses with public health education and experience for key positions in the Latin American Republics. For particulars, communicate with Personnel Director, Office of Inter-American Affairs, 499 Pennsylvania Avenue, N.W., Washington 25, D. C.

Health Educator Wanted: For position in voluntary organization in northeastern U. S. Applicant must have specialized training in health education and some experience in community organization. Salary arranged according to experience and training. Apply **Box MT,** Employment Service, A.P.H.A.

Wanted: Dental Hygienists for up-to-date comprehensive program with adults, preschool and school children; full year positions; tenure of office; good salary and liberal travel allowance. Apply Division of Dental Health, State Bureau of Health, Augusta, Me.

Wanted: Assistant Chief, Division of Child Hygiene, Ohio Dept. of Health. Salary $4,400–$4,800. Must be graduate of approved medical school, have 1 year's graduate training, plus 1 year training or experience in clinical pediatrics. Experience in maternal and child health desirable. Must be licensed in Ohio or eligible for licensure. Apply Chief of Div. of Child Hygiene, Dept. of Health, State Dept. Bldg., Columbus 15, Ohio.

Sanitary Engineer Wanted, City of Dallas, to be associated with public health department. Salary range $171–$270, starting salary depending on experience. Permanent position under civil service with participation in retirement plan. Make application to Civil Service Board, 309 City Hall, Dallas 1, Texas.

Wanted: Bacteriologist with B.S. or B.A. degree and 1 year training in public health bacteriology and serology to work in State Public Health Laboratory. Salary $1,800 to $2,280. Apply State Department of Health, Box 1877, Richmond, Va.

Territorial Department of Health—Juneau, Alaska—wants public health staff nurses. Minimum salary $245 Southeastern, $281.75 Interior. Minimum qualifications necessary: year of public health in school of nursing approved by N.O.P.H.N. and two years' experience, one under qualified supervision, preferably in V.N.A. or rural public health. Vacation one month, 14 days sick leave, 38 hour week. Apply directly to Director, Division of Public Health Nursing, Box 1931, Juneau, Alaska.

Sanitarians wanted: Salary range $265–$300 month. Possibility of advancement to higher classification. Minimum requirements 2 years' college work with courses in the sciences related to public health or approximately equivalent experience in field of environmental sanitation. Three months' course in public health is obligatory. Write Alaska Merit System, Box 201, Juneau, Alaska.

Health Education Consultant wanted: Salary $300–$345 month. Minimum requirements college degree and 1 year graduate work in public health. Experience: 1 year full-time paid employment in any of the fields of public health education. Write Alaska Merit System, Box 201, Juneau, Alaska.

Positions Available in Delaware: 2 County Health Officers, Director Tuberculosis Control, Director Venereal Disease Control, Physical Therapist, Occupational Therapist, Medical Social Worker. Experience and advanced training in public health essential in medical positions. For information write to Dr. Edwin Cameron, State Health Officer, Dover, Del.

Wanted: Medical Director, Municipal Tuberculosis Hospital, bed capacity 115. One with knowledge of surgery preferred. Permanent, full-time. Salary $4,200 with full maintenance. Apply Box 583, Fall River, Mass.

Wanted: Medical officers needed for several openings in California, physicians to direct maternal and child health programs or venereal disease control work, and to assist local health officers. Requires license to practise in California. Salary $4,800 year. Also opening for District Maternal and Child Health Medical Officer with training in pediatrics or obstetrics and public health. License to practise in California required. Salary $4,800 year. Apply to State Department of Public Health, Room 612, Phelan Building, 760 Market Street, San Francisco 2, Calif.

POSITIONS WANTED

Bacteriologist, age 31, B.A. and M.S. at State University of Iowa. Six years' experience in bacteriology and public health. Seeks teaching fellowship to finish Ph.D. degree. **L-479**

Research bacteriologist, Ph.D. 1941, Sanitary and Food Bacteriology, just released from active duty in Sanitary Corps, wishes position with university or commercial laboratory. Especially interested in water and sewage treatment and purification and in food, bottling and distilling industries. **L-478**

Physio-therapist, registered and licensed New York State, long experience, best references, seeking connection with doctor or institution. Call University 4-2305 or write Joseph A. Freiman, 514 W. 114th St., New York 25, N. Y.

Public Health Engineer, age 40, associate member ASCE, shortly to be released from armed forces desires position in public health or sales engineering. **E-486**

Senior Bacteriologist, 11 years' experience, 4½ years as U. S. Army laboratory officer with experience in dysentery and malaria and practical work in war bacteriology, tropical diseases, etc., seeks position anywhere in the U. S. **L-480**

Statistician and registrar of vital statistics for past four years in large city wishes to make a change. **S-461**

Veterinarian with 3 years' experience in army meat and milk inspection seeks position with city or state health department. Well qualified in animal disease control. **M-461**

Sanitary or public health engineer, age 26, M.S. Harvard, seeks position in northeastern U. S. Experience with U. S. Public Health Service and as sanitary inspector. **E-487**

Advertisement

Opportunities Available

WANTED—(a) Public health physician well trained in cancerology to direct program for cancer control; should be capable public speaker and able to qualify for teaching appointment on faculty of university medical school. (b) Public health physician to become associated with city department of health located in one of the United States dependencies; agreeable climate because of trade winds; English prevailing language; excellent opportunity for developing own private practice. **PH1-1** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Public health nurse to supervise outpatient department of teaching hospital; in addition to administrative work would be required to carry out teaching programs for students assigned to outpatient department; position carries faculty appointment with university; $2,400–$3,000. (b) Several staff nurses; municipal department of health; Pacific Northwest; Senior salaries $190–$230. Junior salaries $160–$200. (c) Counselor; registered nurse to serve as counselor in Michigan Avenue office (Chicago) of nationally known company; approximately 300 employees, mostly young women about 30 years of age; duties include first aid; five day week; minimum starting salary, $160; plans for industrial department later on. (d) Clinical instructor with public health experience to conduct public health program in school of nursing, hospital of rather large size; New England. (e) Public health nurse; mining community located in most beautiful part of Pacific Northwest; excellent hospital facilities; $200–$225. (f) Public health supervisor; cancer service, county health program; preferably someone skilled not only in care of patients but qualified also to present educational side of cancer program; organization works closely with health organizations in three major cities and with several hospitals conducting cancer clinics; East. (g) Several nurses for industrial dispensary; large industrial company; $200; South. **PH1-3** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Director of Public relations for one of the national professional organizations; duties include writing speeches, directing publicity of the annual meeting, preparing press releases; advantageous if candidate has had experience in handling public relations in allied fields such as public health; opportunity for developing into important position. (b) Health educator to establish cancer prevention program and ultimately become executive secretary of municipal tuberculosis and health association; residential town short distance from New York City. (c) Health educator for city department of health; capable organizer required; salary around $3,000. (d) Health educator or social worker to take charge of family relations department; department of health large city in the Southwest; would work closely with the school board; immediately. **PH1-2** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

Advertisement

Opportunities Wanted

Health educator is available; A.B., M.S., Ph.D. degrees; several years' successful experience; eight years' teaching experience; six years, director, department health education, large industrial company; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Public Health nurse is available for executive appointment; bachelor of science and master of public health degrees; state university; eight years' executive industrial nurse, large industrial company; two years, executive public health nurse; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Bacteriologist is available for teaching or public health position; A.B., M.S., Ph.D. degrees; twelve years' academic experience during which time he served as professor and head of the department of bacteriology in a university medical school for eight years; past several years, director of research with one of the foundations; for further details, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Young dentist, Veteran World War II is available for position in industrial dentistry; degrees from leading schools; several years' teaching experience; two years, supervisor of large dental clinic; assignment with Army has been chief of dental service, consisting of supervision of six dental clinics; for further information please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Well trained public health physician is available for an appointment of administrative character; A.B., M.D., M.P.H. degrees, leading schools; several years, epidemiologist, state department of health; past four years has held important administrative appointment with large teaching institution; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

NEWS FROM THE FIELD

THE PRESIDENT'S HEALTH MESSAGE

On November 19, President Harry S. Truman presented to a joint session of Congress a comprehensive health message—the first message of any President to deal thus completely with the broad problems of national health and the means for their solution—in fact, it has been said to be the first presidential health message of any kind to Congress. He said in part: "We should resolve now that the health of this nation is a national concern; that financial barriers in the way of attaining health shall be removed; that the health of all the citizens deserves the help of all the nation."

The President outlined five unmet problems and sketched, in principle, the means for their solution. These are:

1. The distribution of physicians in the United States is grossly uneven and is matched by inequalities in hospitals and other health facilities. About 1,200 counties representing 15,000,000 persons have either no local hospital or none that meets the minimum standards of professional associations; 31 counties, each with more than a thousand inhabitants, in 1940 had not a single practising physician. In the nation as a whole the proportion of physicians to population is as favorable as anywhere in the world. The disparity of their distribution is due to lack of adequate facilities for medical treatment and to the low income levels in many communities which make it difficult and often impossible for doctors to make a living. He suggests that the 60,000 doctors and tens of thousands of other professional personnel now being demobilized from the armed forces cannot be assigned, but must be attracted to communities by adequate facilities for the practice of medicine and by assurance of economic security.

The President recommends that the federal government provide financial and other assistance for the construction of needed hospitals, health centers, and other medical, health, and rehabilitation facilities. It should be possible to meet deficiencies in hospital and health facilities so that modern services —for both prevention and cure—can be accessible to all the people.

2. There is need for the development of local public health services and maternal and child care. Although some 18,000 local governmental units have responsibility for health service, nevertheless 40,000,000 citizens, a large majority of them in rural areas, live in communities lacking full-time local public health service. At the present rate of progress it would take more than a hundred years to cover the whole nation. We are only beginning to realize our potentialities in achieving physical well-being for all our people.

To develop full-time public health services throughout the nation the President recommends an extension of the present federal-state coöperative relationships whereby states and localities receive financial aid for local services. These services should be financed by states and localities, and federal grants should be in proportion to state and local expenditures and should bear some relation to the financial ability of the states.

3. The third basic problem concerns medical research and professional education. Research can do much to develop ways to reduce those diseases of body and mind which now cause most sickness, disability, and premature

death. And research can do much toward teaching us how to keep well and how to prolong healthy human life. More coördinated research is needed on the cause, prevention, and cure of cancer, for example, which currently causes 160,000 deaths a year. There is also special need for research on mental diseases and abnormalities. Mentally ill are estimated to number two million; they occupy half of the existing hospital beds, at a cost of about $500,000,000 a year; 125,000 new mental cases are admitted to institutions annually. He says further that the money invested in research pays enormous dividends. If anyone doubts this, let him think of penicillin, plasma, DDT, and new rehabilitation techniques.

Professional education and medical research should be strengthened where necessary through federal grants-in-aid to public and to non-profit private agencies and institutions.

4. The high cost of individual medical care is the principal reason why people do not receive the medical care when they need it. This is true not only of needy persons but for a large proportion of normally self supporting persons as well. At present part of this deficiency is being met, particularly in rural areas, by the kindness or private charity of the individual physician, who should not be expected to carry so heavy a load. The President estimated that on the average 4 per cent of the national income is absorbed for medical care. He suggests therefore distributing the costs through expansion of the compulsory insurance system, operating on the well developed insurance principle of spreading the risk of any unforeseeable personal or family calamity—fire, burglary, sickness.

As to the organization and administration of such a system, the President says medical services are personal. Therefore, the nation-wide system must be highly decentralized in administration. The local administrative unit must be the keystone of the system so as to provide for local services and adaptation to local needs and conditions. Locally as well as nationally, policy and administration should be guided by advisory committees in which the public and the medical professions are represented.

He further stresses the continued personal relationship between patient and doctor under such a system, the enlargement of free choice of physicians by the removal of financial barriers, and the free choice by physicians to practise within or without the system.

5. The fifth problem has to do with loss of earnings due to illness. On an average day about 7,000,000 persons are so disabled by sickness or injury that they cannot go about their usual tasks. Of these, about 3,250,000 are persons who would otherwise be working or seeking employment. Every year four or five hundred million working days are lost from productive employment because of illness and accident—about forty times the number of days lost because of strikes, on the average, during the ten years before the war.

A comprehensive health program must include the payment of benefits to replace at least part of the earnings that are lost during the period of sickness and long-term disability. This protection, according to the President, can be readily and conveniently provided through expansion of the present social insurance system, with appropriate adjustment of premiums.

From the newspaper comment we quote from the *New York Times* editorial of November 21:

"The President's message on a five-point health program deals thoroughly with the medical implications of the Social Security Act. Evidently to offset opposition, fully a third of the message argues persuasively for the better distribution of medical care and

the reduction of its cost and dwells on the inappropriateness of the term 'socialized medicine' when beneficiaries of medical insurance pay their own premiums and choose their own doctors in accordance with tradition. We have, then, both a message to Congress and an educational document which should blow away much of the fog of controversy.

"The plans outlined by the President are ambitious and far-reaching. Nowhere in the world is there anything quite like his proposed integration of hospitals and medical centers built and operated at public expense with health service, physicians, maternal and child care, dentistry, medical education and research."

The *New York Herald Tribune* of November 21 says editorially in part:

"President Truman's message on national health was, in the first place, a comprehensive and impressive survey of the strength and weakness of medical care in the United States. Few would attempt to dispute the reality of the problems he set worth or the challenge they present to a powerful and wealthy nation. Moreover, the President showed an obvious concern lest a national health program become too unwieldy, overcentralized, bureaucratic. He emphasized continually the need for local administration, for the utmost in voluntary coöperation, for as much flexibility as possible. The President's message deserves the most careful study because of the magnitude of the problem with which he seeks to deal and the thoughtful attention he has given it."

DR. CUMMING COMPLETES 25 YEARS WITH PAN AMERICAN SANITARY BUREAU

On December 20, 1945, Dr. Hugh S. Cumming, Surgeon General (Retired), U. S. Public Health Service, completed twenty-five years as Director of the Pan American Sanitary Bureau, the official health organization of the American Republics and the oldest international health body in the world. When Dr. Cumming retired from the Public Health Service in January, 1936, he did not give up his interest in public health, but decided to devote himself to improving inter-American health conditions and good will through his continued, full-time direction of the Pan American Sanitary Bureau. In 1920 when Dr. Cumming first assumed direction of this Bureau, available funds permitted the employment of only one clerk to collect and distribute epidemiological information. Since those early days, however, the Bureau has grown, with increased appropriations making possible an increasing participation in inter-American health work. Impetus was given to its growth by the adoption in Habana in 1924 of the Pan American Sanitary Code, "the first and only treaty to be ratified by all the American Republics." For a number of years the Bureau has been sending representatives, including physicians, sanitary engineers, laboratory workers, entomologists, nurses, etc., to Latin America to give advice and assistance to the different republics in their health problems, and undertaking specific campaigns against such conditions as plague, onchocerciasis, venereal diseases, typhus and malaria, organizing nursing schools and hospitals, granting fellowships, and similar coöperative programs. A recommendation was made at the Inter-American Conference held at Chapultepec in February and March, 1945, that the Pan American Sanitary Bureau be given such financial aid and technical and other personnel as may be needed to promote its work of coördination and technical direction of sanitary activities of the Americas.

Dr. Cumming has been honored many times by the American Republics which have granted him the following decorations: Order of Carlos Finlay, Cuba, 1931, Order of El Mérito, Ecuador, 1931, Order of El Sol del Perú, 1934, Order of Honneur et Mérite, Haiti, 1939, Order of Boyacá, Colombia, 1939, Order of Al Mérito, Chile, 1940, Order of Mérito, Juan Pablo Duarte, Dominican Republic, 1943, Order of Eduardo Licéaga, México, 1943, Order of Mérito, Paraguay, 1945. Dr. Cum-

ming was President of the American Public Health Association in 1931.

Dr. Cumming's anniversary has been made the subject of recognition in messages from the highest authorities of the American Republics and the United States. A gold medal has recently been awarded him by the Government of Guatemala to commemorate the anniversary.

NEW ORLEANS ADOPTS TYPHUS CONTROL ORDINANCE

John M. Whitney, M.D., Superintendent of Public Health of New Orleans, La., has reported that the Commission Council of the City of New Orleans has adopted an ordinance aiding the rat control program. An appropriation of $10,000 has been made for this purpose. E. B. McCrary of the Division of Pest Control of the Health Department is in charge. Copies of the ordinance may be obtained by addressing Dr. Whitney.

NUTRITION FOUNDATION EXTENDS RESEARCH GRANTS

Charles Glen King, Ph.D., Scientific Director of the Nutrition Foundation, Inc., New York City, has announced that the Board of Trustees at the Foundation's annual meeting in November awarded new grants of $120,565, bringing the total since the establishment of the Foundation to $1,041,755. Dr. James Bryant Conant, President of Harvard University, was the speaker at the annual luncheon.

Among the institutions receiving grants were Stanford University, Yale University, University of Wisconsin, University of Toronto, Tulane University, University of California, Pennsylvania State College, Cornell University, Duke University, Northwestern University, Meharry Medical College, Harvard University, University of Southern California, and Washington University.

AWARDS OF TYPHUS COMMISSION MEDAL

The Office of the Surgeon General, U. S. Army, Washington, has announced that the United States of America Typhus Commission Medal has been awarded to a group of officers including Lt. Colonel Wilson C. Williams, M.C., formerly State Health Officer of Tennessee, Nashville, and Captain Bernard D. Daitz, Sn.C., of New York City.

TROPICAL DISEASE QUARANTINE

A joint Army-Navy and Public Health Service military quarantine program will take all possible precautions against the introduction of new tropical diseases into this country through the deployment of troops, according to Lt. Col. O. R. McCoy, MC, Director of the Tropical Disease Control Division, Office of The Surgeon General, who spoke at the recent meeting of the Southern Medical Association in Cincinnati.

This precautionary program, Colonel McCoy pointed out, is carried on in addition to the preventive measures taken by the services for all troops serving overseas. Immunization and high standards of sanitation have been enforced, and the Army has taken definite steps to minimize secondary cases of malaria among soldiers already returned to the United States. The latter precaution requires that soldiers taking suppressive medication against malaria when they return to this country continue to take the drug for twenty-eight days.

Dengue, sandfly fever, and scrub typhus are limited in their course, having no recurrences, and so offer little hazard as diseases imported by returned soldiers. It has also been found that the incidence of carriers of bacillary dysentery is "extremely low" in military personnel, and that the chances of transmission of filiariasis in the United States is very slight.

"Troops are examined," Colonel

McCoy concluded, "before departure from abroad and after arrival in this country to identify and screen out for treatment individuals who may have acquired communicable diseases during overseas service. Also new regulations have been formulated which are intended to prevent the introduction of disease through infected animals, plants or insects."

NEW AMERICAN STANDARD BUILDING CODE

A new American Standard giving designers data on the loads a building can carry with safety has just been approved by the American Standards Association. This marks another advance in the development of a complete series of standards in the building field and will help to answer such questions as: how strong should floors and walls be made in factories, office buildings, and theaters to prevent them from collapsing when occupied by the machinery, desks, or audiences which they accommodate? And whether it is necessary in any particular part of the country to provide especially strong construction to resist wind pressures, to withstand earthquake shocks, and to prevent collapse of roofs under the load of winter snow.

MICHIGAN PUBLIC HEALTH ASSOCIATION

The Michigan Public Health Association held its 25th Annual Public Health Conference in Grand Rapids November 7 to 9. The theme of the three day conference was "Reconversion," and the attendance was 610.

The following new officers were elected:

President—David Littlejohn, M.D., Dearborn
President-elect—K. R. Gibson, D.D.S., Detroit
Vice-President—H. J. Dunsmore, Battle Creek
Secretary-Treasurer—Marjorie Delavan, Lansing
Representative on A.P.H.A. Governing Council—Nathan Sinai, Dr.P.H., Ann Arbor

RESEARCH FUND FOR HEART DISEASE

A joint committee of the American Life Convention and the Life Insurance Association of America has announced the creation of a $3,500,000 medical research fund which is being made available through the participation of 143 life insurance companies in the United States and Canada. M. Albert Linton, chairman of the joint committee, states that the first research will be planned in diseases of the heart and arteries because of the primary importance of these diseases to the public and to life insurance policy holders. He compared the deaths from heart disease during the 3½ years of war in the United States with those from combat deaths in all branches of the armed services with 1,400,000 of the former and 272,000 of the latter.

The allocation of the funds will be made by an advisory council of eight distinguished physicians and it is expected that a recognized leader in the field of medical research will be named to the post of scientific director. Annual contributions of more than $500,000 each year are expected to raise the total sum in six years' time.

GENERAL SIMMONS RECEIVES DISTINGUISHED SERVICE MEDAL

On November 19, 1945, Major General Norman T. Kirk, The Surgeon General of the Army, presented the Distinguished Service Medal to Brigadier General James Stevens Simmons, USA, Chief, Preventive Medicine Service, Office of The Surgeon General, Washington, D. C. The citation which accompanied the medal read as follows:

"Brigadier General James Stevens Simmons rendered exceptionally meritorious service in a duty of heavy responsibility as Chief of the Preventive Medicine Service, Office of The Surgeon General, from November, 1939, to August, 1945. The service he organized and developed carried out a world-wide program of military and civil public health which secured both immediate and enduring bene-

fits by reducing hazards to the health of troops, civilians engaged in essential war work, and refugees and displaced persons. By applying the best available knowledge and fostering research, he developed and extended new information on the causes and prevention of communicable diseases, on the improvement of nutrition for soldiers and on the reduction or elimination of the health hazards of mechanized warfare and adherence to ideals, inspired and established a positive concept of health for troops and civilians. With extraordinary foresight, he was in advance of events, devising measures for health protection before critical needs arose; and with dynamic energy, he overcame severe difficulties. By protecting the health of the Army and conserving the health of the nation, General Simmons contributed directly to winning the war."

MASSACHUSETTS HEALTH OFFICERS ORGANIZE

The health officers of the North Metropolitan State Health District in Massachusetts have organized the North Metropolitan District Health Officers' and Agents' Conference intended to afford members an opportunity to discuss inter-community health problems and to exchange ideas regarding administrative practices.

Officers of the association include Francis P. Denny, M.D., Health Officer, Brookline, President; John D. Crowley, Agent, Cambridge, Vice-President; May C. Welsh, Agent, Malden, Secretary; and A. Daniel Rubenstein, M.D., District Health Officer, Consultant.

KOREAN PHYSICIANS STUDY PUBLIC HEALTH IN THE UNITED STATES

A group of nine physicians from Korea have begun a year of study in the field of public health under the auspices of the International Health Division of the Rockefeller Foundation, according to an announcement by the Office of the Surgeon General, U. S. Army. Three of the physicians are at the Johns Hopkins School of Hygiene, three at the Harvard School of Public Health, and three at the University of Michigan School of Public Health. According to Major General Norman T. Kirk, the purpose of this year of training is to lay the foundation for a self-sufficient medical service for the Korean nation. For more than thirty years, according to Dr. Kirk, the Japanese have dominated all medical and other scientific work in Korea as well as its national and local government affairs. No Korean has been allowed to serve in a position of responsibility in the nation or in his own community.

PROFESSOR C.-E. A. WINSLOW RECEIVES 1945 ELIZABETH SEVERANCE PRENTISS AWARD

Presentation of the second annual Elizabeth Severance Prentiss National Award in Health Education to Professor C.-E. A. Winslow was made at the luncheon of the fifth anniversary meeting of the Cleveland Health Museum on November 27, 1945. The redesigned award in the form of a plaque is shown. The presentation was made by radio over the N.B.C. network by Dr. James Rowland Angell, President Emeritus of Yale University, in whose medical school Professor Winslow has taught public health for thirty years.

Professor Winslow addressed the

Elizabeth Severance Prentiss Award

more than 600 guests at the luncheon on "Ten Unattained Goals of Public Health," among which he listed organized community health education.

The award was made possible through a grant of Mrs. Elizabeth Severance Prentiss. Its first recipients in 1944 were Mary Swain Routzahn and Edward G. Routzahn (posthumously), to whom Professor Winslow gave credit for the real accomplishments in the field of health education.

PUBLIC HEALTH LABORATORY DIRECTORS' MEETING, CINCINNATI

On November 10 and 11, immediately preceding the meeting of the Southern Medical Association and Associated Societies in Cincinnati, a meeting of the Conference of State and Provincial Public Health Laboratory Directors was held in that city. About half of the state laboratories, the U. S. Public Health Service, and the Department of Pensions and National Health of Canada were represented.

Many current problems of laboratories were outlined in reports of standing committees and discussions of them; and plans were made to increase the activities of the organization in the postwar period. A proposal was entertained to broaden its scope by giving greater participation to personnel of municipal, county, and other public health laboratories and a committee was appointed to draft proposed revisions of the constitution to embody these suggestions.

SOCIAL HYGIENE DAY

The observance of Social Hygiene Day, February 6, 1946, has special significance this year, as the impetus given the whole program of venereal disease control under wartime conditions must be maintained and the goal "the virtual eradication of syphilis and gonorrhea within the foreseeable future" realized.

The American Social Hygiene Association has prepared publicity materials to assist any community group in observing the occasion through meetings, radio programs, or other group activities. The folder *Beyond Victory* is free in quantity and without charge. It describes ways in which Social Hygiene Day can be made effective in your community. Order from the American Social Hygiene Association, 1790 Broadway, New York 19, N. Y.

A NUTRITION PROGRAM WITH THREE-WAY BENEFITS

An unusual experimental program in nutrition was recently started at Flora Stone Mather College, Western Reserve University.

Thirty-six students with a variety of difficulties—organic, physical, and neurological—are under the supervision of seven public health nurses, students in graduate courses in public health nutrition at the University. Each student has had a nutrition program prescribed to fit her individual needs, under the direction of the Professor of Physical Education, the Professor of Home Economics, and the Director of Student Health Service. The public health nurses—each from a different state department of health and one from Puerto Rico—will keep careful records of progress of the students, write a report of the program, and carry it back to their home state. Thus, this program benefits the underpar student, the graduate student in public health nutrition, and eventually, the state health department's service to the public.

INDIANAPOLIS HEALTH CENTER UNDER CONSTRUCTION

Under the direction of the Indianapolis Board of Health, the construction of a health center building as an adjunct to Flanner House was begun on June 13. The building will cost approximately $105,000. With an additional $20,000 to be spent for equip-

ment, and will contain clinic, examination and x-ray rooms, and offices for staff members. The work will be tied up with the city's slum clearance project, and, a case finding program of tuberculosis, venereal disease, antepartum medicine, infant and child health, dental and general medicine will be conducted.

CONGRESS ON MEDICAL EDUCATION AND LICENSURE

The Congress on Medical Education and Licensure of the American Medical Association will hold its 42nd annual meeting at the Palmer House, Chicago, on February 11 and 12.

UNRRA REPORTS EUROPE'S EPIDEMICS HELD IN CHECK

No communicable disease "is sufficiently prevalent as to constitute a menace to international health." This word comes from a November 26 report from the Chief of the Epidemic Control Branch of UNRRA's Health Division, Dr. G. Stuart, but with the added caution that the "hump of the difficult winter months has not yet been passed."

A summary of the status of some of the more common communicable diseases follows:

Smallpox—Prevalent only in Italy

Louse-Borne Typhus—D.D.T. has practically eliminated it from British and American zones. Serious in many parts of the Balkans and less serious in Bulgaria and Greece. Can be held in check with D.D.T.

Plague—Only in Malta, but remains a threat because North Africa and Palestine remain infected.

Diphtheria—Incidence high, especially in Germany.

Typhoid Fever—Greatly increased in many countries; in Germany in September it was 30 times the normal rate.

Tuberculosis—Greatly increased in many continental countries.

Syphilis—Progress made in venereal disease control in 20 years virtually wiped out by war years. Syphilis increased three- to nine-fold in most countries, twenty-fold in Germany.

Malaria—Epidemic in Greece; leading cause of illness in Mediterranean basin. Spraying marshland areas with D.D.T. from specially equipped planes is expected to cut the risks of malaria or eliminate it entirely in Greece within a year.

SOUTHERN BRANCH, A.P.H.A., ELECTS OFFICERS

The Southern Branch, American Public Health Association, met during the meeting of the Southern Medical Association in Cincinnati, Ohio, November 14 and 15, under the presidency of R. H. Hutcheson, M.D., Commissioner of Health of the Tennessee State Department of Health, Nashville.

The officers for the ensuing year include the following:

President—Dr. W. K. Sharp, USPHS, Richmond, Va.

First Vice-President—Dr. George H. Denison, Birmingham and Jefferson County Health Officer, Birmingham, Ala.

Second Vice-President—J. M. Jarrett, Director Public Health Engineering Raleigh, N. C.

Third Vice-President—Abbie Weaver, R.N., Director Public Health Nursing, State Board of Health, Atlanta, Ga.

Secretary-Treasurer—Dr. John W. Williams, Jr., State Director of Local Health, State Board of Health, Jefferson City, Mo.

COLUMBIA WILL ADMIT MID-YEAR CLASS

In response to requests, mainly from those recently discharged from the armed services, the School of Public Health of Columbia University, New York, has announced that properly qualified applicants for the Master of Public Health course will be admitted on February 4, 1946. Graduate students so admitted will be expected to spend the summer months in obtaining field experience, returning for two additional quarters of academic work late in September, according to the announcement.

GREEK NATIONAL TUBERCULOSIS ASSOCIATION

The Greek National Tuberculosis As-

sociation, formed in May, 1945, is now in active operation with the Regent of Greece as Patron, according to a report received from J. B. McDougall, Head of the Tuberculosis Section, Health Division, UNRRA Greece Mission, and published in the UNRRA Epidemiological *Bulletin No. 20.*

The Greek Tuberculosis Association will be the first of any in the liberated countries of Europe to become affiliated with the International Union against Tuberculosis, which in pre-war years had its headquarters in Paris. The Greek Association will encourage local medical men to do research on tuberculosis problems peculiar to Greece, such as the incidence of tuberculosis and its clinical behavior in malaria-stricken areas.

RED CROSS NAMES HEALTH SERVICES ADVISORY BOARD

Basil O'Connor recently announced appointment of an Advisory Board on Health Services to coördinate activities of the American Red Cross in the health field. Mr. O'Connor, national Red Cross Chairman, named as board chairman Lewis H. Weed, M.D., of Baltimore. Dr. Weed also is chairman of the medical sciences division of the National Research Council; and director, School of Medicine, Johns Hopkins University.

The committee consists of 109 men and women from 25 states and the District of Columbia, representing every specialty in the field of health. Not only physicians were appointed, but also nurses, dentists, health educators, medical and psychiatric social workers, hospital administrators, medical publicists, nutritionists, pediatricians, public health administrators, and sanitary engineers.

Three members of the advisory board will serve as general vice chairmen. They are: Roger I. Lee, M.D., Boston, Mass., John D. Lyttle, M.D., Los Angeles, Calif., and John Romano, M.D., Cincinnati, Ohio.

REPRINTS FOR THE DEVASTATED MEDICAL LIBRARIES OF MANILA

In connection with its campaign to help rebuild the medical libraries of Manila which were destroyed during the Japanese occupation, the Academy-International of Medicine requests that medical authors contribute eight or ten reprints of each of their articles which have been published since 1941. They may be sent at the regular parcel post rate of sixteen cents for the first pound and eleven cents for each additional pound, care of A. B. M. Sison, M.D., Philippine General Hospital, Manila, P. I.

HEALTH EDUCATION INSTITUTE IN MASSACHUSETTS

The Massachusetts Tuberculosis League, in coöperation with Simmons College, announces an 8 week health education institute February 4 through March 29, designed primarily "to train assistants in health education to work under supervision in the tuberculosis associations of the state." The course is open also to any education workers in the tuberculosis field and to health workers in voluntary and official agencies of Massachusetts.

The first 5 weeks, at Simmons College, will be devoted to lectures and discussions, the remaining 3 weeks to supervised field work. Address inquiries to Massachusetts Tuberculosis League, 1148 Little Building, Boston 16, Mass.

AMERICAN ASSOCIATION OF PUBLIC HEALTH DENTISTS

Frank C. Cady, D.D.S., Senior Dental Surgeon of the U. S. Public Health Service is now President of the American Association of Public Health Dentists, succeeding Dr. William R. Davis of Michigan.

Dr. Cady was one of the founders of the association, is a charter member and was its first Secretary, a position he filled for five consecutive years.

Other officers elected were: Edward Taylor of Texas, President-elect; C. Ray Taylor of Michigan, Secretary; Linwood G. Grace of Pennsylvania, Treasurer, and Vern D. Irwin of Minnesota, Editor.

$2,000,000 NURSES' NATIONAL MEMORIAL

Plans for a National Memorial in the District of Columbia to the heroic nurses of World War II in the form of a social center and temporary residence have been inaugurated by a distinguished group of sponsors including top-ranking officers of the Armed Forces and their wives.

PERSONALS

Central States

RUTH E. CHURCH, M.D., M.S.,* who has been Medical Director of the District Health Unit No. 7 at Washington, Iowa, for several years, has resigned to become director of the McDonough-Fulton Bi-County Health Department with headquarters in Macomb and Canton, Ill., effective December 1.

NABOTH O. PEARCE, M.D., of Minneapolis, Minn., has been appointed Tuberculosis Control Officer in the Minnesota Department of Health to direct a state-wide tuberculosis program. The work, which will be financed by a federal grant of $100,000, will be supplemental to activities now carried on by Dr. Walter J. Marcley, Minneapolis, in the Division of Preventable Diseases, by the local health departments, and the Christmas Seal organizations. The objective of the program is to discover incipient cases of tuberculosis.

Eastern States

MAJOR CARL R. FELLERS,* Head, Food Technology Department at Massachusetts State College, Amherst, has returned to the United States. For 3½ years his headquarters were located at Sydney, Australia. He organized and operated three Army Subsistence Laboratories at Sydney, Melbourne, and Brisbane, and was in charge of all Army Subsistence Inspection (except animal products) in the Southwest Pacific Area.

JOHN THOMAS FULTON, D.D.S.,† has been appointed to the newly created position of Dental Services Adviser in the Division of Research and Child Development of the Children's Bureau, Department of Labor. Dr. Fulton is the technical adviser to the Bureau in the field of services to children and will devote himself primarily to research, administration, and practice in public health dentistry for children. His appointment is indicative of the continued expansion and recognition in the Bureau of the importance of dental health. Dr. Fulton was formerly Chief of the Division of Dental Hygiene of the Connecticut State Health Dept.

COMDR. LEONARD J. GOLDWATER (MC), USNR,* has been released to inactive duty after 4½ years of active service with the Navy. During his time in the Navy. Dr. Goldwater served as Industrial Health Officer at several major naval stations including the Navy Yards at Brooklyn, N. Y., and Pearl Harbor. Dr. Goldwater will resume his position as Assistant Professor of Preventive Medicine at New York University College of Medicine.

H. F. KILANDER, PH.D.,† has joined

* Fellow A.P.H.A.
† Member A.P.H.A.

the staff of the National Tuberculosis Association, New York, as Associate in Health Education. He formerly was Administrative Dean at Panzer College of Physical Education and Hygiene, East Orange, N. J. During the war, he served as Regional Chief in the Industrial Nutrition Program, first in the Federal Security Agency and later in the War Food Administration.

JOHN L. LAVAN, M.D., DR.P.H.,* has resigned as Director of Research for the National Foundation for Infantile Paralysis, New York, to join the staff of the American College of Surgeons, with headquarters for the present at 210 East 68th Street, New York, N. Y.

JAMES LIEBERMAN, D.V.M.,† of Flushing, N. Y., has recently been stationed at the Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md.

ELEANOR BROWN MERRILL † of New York City, Executive Director of the National Society for the Prevention of Blindness, left in November for Montevideo, Uruguay, to attend the Pan American Congress on Ophthalmology.

RALPH S. MUCKENFUSS, M.D.,* who commanded the first Medical General Laboratory in the European theater of operations and the European theater blood bank, has returned from military service to resume his position as Director of the Bureau of Laboratories of the New York City Department of Health. Dr. Muckenfuss had been on military leave since July 22, 1942.

EDWARD W. PALMER † has resigned from his position as Junior Master of Brighton High School, Brighton, Mass., to become Executive Secretary of the Nassau County Cancer Committee effective September 15.

WILLIAM M. SCHMIDT, M.D.,* New York, N. Y., former Medical Director for the New York region of the Children's Bureau, U. S. Department of Labor, is en route to Europe to supervise the health and medical services on the continent of the Joint Distribution Committee, major American agency for the relief and rehabilitation of distressed Jews overseas.

Southern States

JOEL C. BEALL,† who has served for some years as public health engineer with Memphis and Shelby County Health Department, Memphis, Tenn., has been called to active duty as Assistant Sanitary Engineer (R) in the Division of Preventable Diseases, Typhus Control Service of the USPHS, with offices in Macon, Ga.

GEORGE B. DARLING, DR.P.H.,* formerly President of the W. K. Kellogg Foundation, who since 1943 has been associated with the Division of Medical Sciences of the National Research Council, Washington, D. C., first as Executive Officer of the Committee on Military Medicine, and later as Vice Chairman of the division, has been appointed Executive Secretary of the National Academy of Sciences and of the National Research Council.

CHANGES IN HEALTH OFFICERS IN FLORIDA:

SIDNEY J. WILLIAMS, M.D., M.P.H.,† formerly Director of the Pike County, Miss., Health Department, has accepted Directorship of the Southeastern Florida Health District with headquarters at Vero Beach.

FRANK L. QUILLMAN, M.D.,† has been appointed Director of the Seminole County Health Unit with headquarters at Sanford. Dr. Quillman was formerly a local health officer and lately has been Director of Venereal Disease Con-

* Fellow A.P.H.A.
† Member A.P.H.A.

trol in the Dade County Health Department.

E. F. HOFFMAN, M.D., M.S.P.H.,† recently resigned as Epidemiologist with the State Board of Health and has accepted the position of Director of the Central Florida Health District with headquarters as Ocala. Dr. Hoffman will also direct the Northern Florida and the Southwestern Florida Health Districts, until officers have been secured for these districts.

M. ESTELLE INGOLDSBY, R.N.,† of the West Virginia State Department of Health, Charleston, has been elected Chairman of the West Virginia State Nutrition Committee.

CHANGES IN HEALTH OFFICERS IN KENTUCKY:

CHARLES D. CAWOOD, M.D.,* who for some years has been Health Officer of the Lexington-Fayette County Board of Health of Kentucky, has resigned as of November 30 to enter private practice.

DR. RALPH GREGG, Sr. Surgeon, U. S. Public Health Service, has been appointed Health Officer of the City of Lexington-Fayette Co. Health Department effective December 1, succeeding CHARLES D. CAWOOD, M.D.,* resigned.

COLONEL JOHN B. YOUMANS, M.C., A.U.S., Assistant Director of the Civil Public Health and Nutrition Division, Office of the Surgeon General, Washington, has recently returned from a 3 months' stay in Europe as chief nutrition consultant.

Western States

HYRUM L. MARSHALL, M.D.,† Professor and Head of the Department of Public Health and Preventive Medicine, has been named Acting Dean of the University of Utah School of Medicine, Salt Lake City.

CHANGES IN HEALTH OFFICERS IN OREGON:

ROBERT W. RIPLEY, M.D.,† has resigned as Health Officer of Corvalis to accept a position in the Connecticut State Department of Health.

WILLIAM T. EDMUNDSON, M.D., Newberg, has been appointed Health Officer for Hood River County to succeed DR. CECIL W. MCCAIN, of Hood River, resigned.

EDWARD L. VAN AELSTYN, M.D.,† of Price, Utah, has been appointed Director of the Cowlitz and Wahkiakum Counties Health Departments in Washington State, succeeding DR. THOMAS H. BIGGS, who resigned recently to devote his time to private practice.

Foreign

SIR JOHN BOYD ORR,* of Bucksburn, Aberdeenshire, Scotland, a member of the British Parliament, has been elected Director General of the Food and Agriculture Organization which will have temporary offices in Washington, D. C.

COL. GEORGE M. POWELL, M.C., is the new Assistant Chief Health Officer of the Panama Canal, succeeding COL. ALBERT R. DREISBACH, M.C., whose reassignment in June terminated a seven month tour of duty on the Isthmus.

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† Member A.P.H.A.